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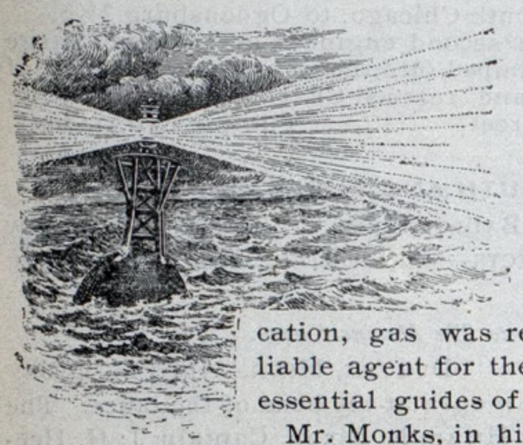
LIGHTHOUSE AND BUOY ILLUMINATION.

So to night-wandering sailors pale with fears,
Wide o'er the watery waste a light appears,
Which on the far-seen mountain blazing high,
Streams from lonely watch-tower to the sky.
—*Pope's Iliad.*



LLUMINATION of lighthouses by gas was first used at Salvore near Trieste in 1817; it will therefore be noted that very soon after Murdock's application, gas was recognized as a reliable agent for the lighting of these essential guides of commerce.

Mr. Monks, in his Artificial Light, says: "There is no surer test of the advance of civilization in any maritime nation than in the increase of the number of lighthouses along its coast."

Ptolemy Philadelphus must have realized this fact when he caused the erection on the island of Pharos, opposite that wonderful city of Alexandria, the most celebrated lighthouse in ancient times. This edifice when completed was considered one of the seven wonders of the world. Abbott tells us, in his history of Cleopatra, that this structure was indebted for its fame in some degree "to the conspicuousness of its situation, rising as it did at the entrance of the greatest commercial emporium of its time, and standing there like a pillar of cloud by day and of fire by night, to attract the welcome gaze of every wandering mariner whose ship came within its horizon, and to awake his gratitude by tendering him its guidance and dispelling his fears." Pharos' light was produced by a fire made of such combustibles as would emit the brightest flame. It smouldered by day and was renewed at sundown, new supplies being added continuously during the night.

Josephus says: "The light emitted from Pharos' tower was visible at a distance of 34 miles, but modern writers doubt the accuracy of this statement, since if such was the case the structure must have been at least 900 feet high."

Pharos was thought to have been destroyed by an earthquake. Nothing now remains to mark its history but a mass of useless and unmeaning ruins.

No doubt can exist that from the earliest ages manguiding lights were employed. The quotation at the beginning of this article is from Pope's translation of Homer; it is believed that the poet had the guiding beacon in mind when he penned these lines.

Of modern structures the Eddystone light off Plymouth, England, may be taken as the opening of a new era in lighthouse construction; it was erected under enormous engineering difficulties. The masonry is 76 feet 6 inches, and the top of the lantern 93 feet above the foundation. It was completed in 1759, and was first lighted by tallow candles of 67 modern candle-power, unaided by any optical apparatus. The power of the beam from the present tower is equal to 80,000 candles.

The expense of the light-house and sea-coast beacons of Great Britain is provided for by a fund derived from lighthouse tolls, amounting to $2,500,000 annually. The service is self-supporting. The successive stages in coast illumination have been as follows: Wood fires, coal fires, candle-lights, flat-wick lamps, circular-wick lamps of Argand and concentric-wick lamps; and in them have been burned first sperm oil, then vegetable oil and finally mineral oil, aided by reflectors and by lenses on the principle introduced by Fresnel.

The lighthouse system of this country began with the settlement of the earliest colonists, who recognized the necessity for beacons with which to guide their home-coming shallops to a safe anchorage. Point Allerton, a prominent headland near the entrance to Boston Harbor, was selected for the location of what was probably the first beacon to illuminate the shores of this country. It was lighted by means of "fier bales and ocum" burned in an iron grate or basket. Our first lighthouse was also built at the entrance to Boston Harbor during the years 1715-16 at a cost of £2,285 17s and 8½d. It was first lighted by tallow candles and supported by light dues of 1d per ton on all incoming and outgoing vessels.

The theory of coast lighting adopted by the United States is that each coast shall be so set with towers that the rays from their lights shall meet and pass each other, so that a vessel shall never be out of sight of light, and that there shall be no dark spaces between

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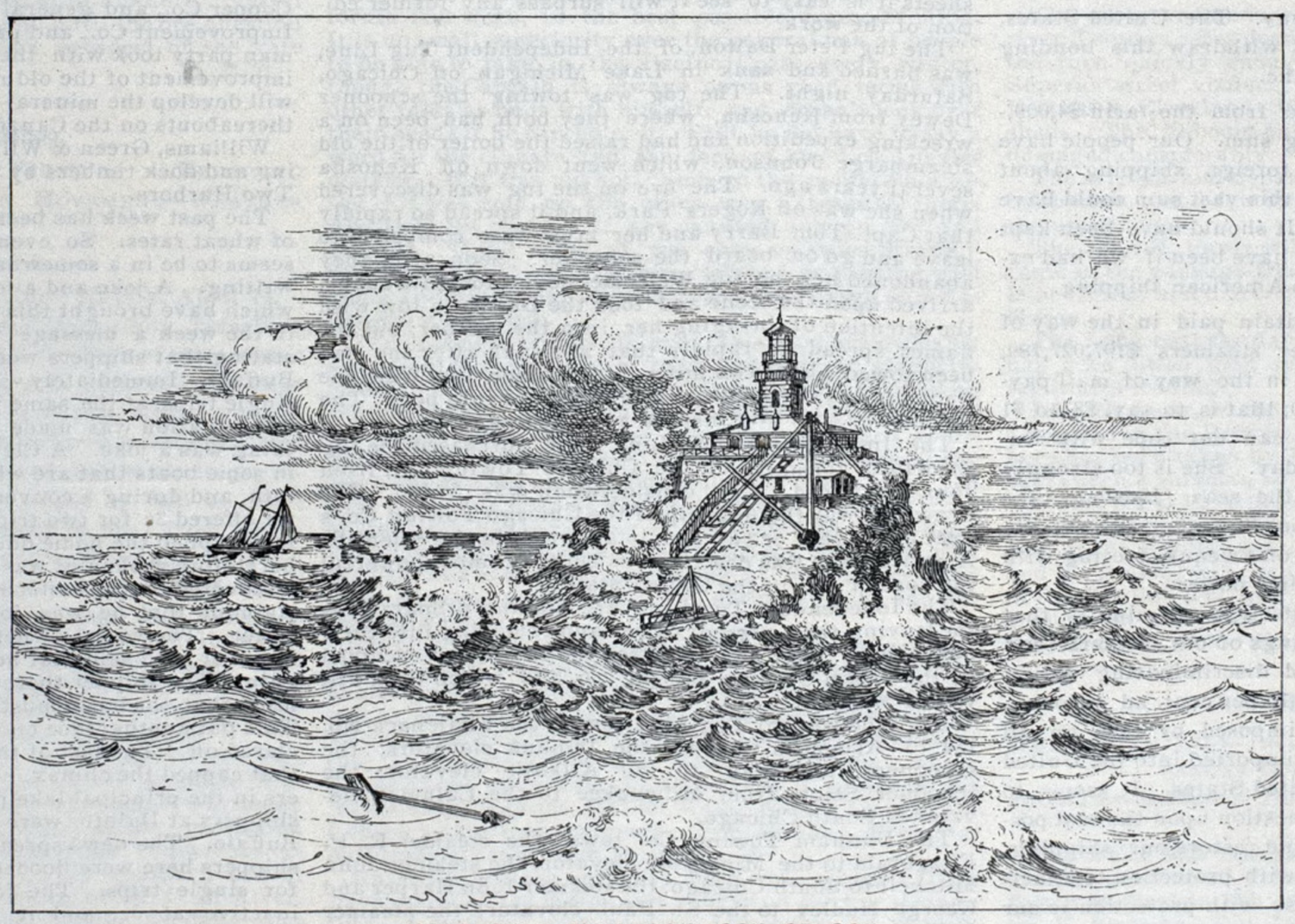


LIGHTHOUSE, TILLAMOOK ROCK, OREGON.

MR. ELKINS AND THE POSTAL SUBSIDIES.

In the Senate last Thursday, Senator Elkins, of West Virginia. showed that although his home is in an interior state, he has a proper appreciation of the value of American water commerce. By unanimous consent he made a speech in favor of the amendment to the postoffice appropriation bill recommended by the Committee on Appropriations. This amendment provides that

For additional compensation to the Oceanic Steamship Co. for transporting the mails by its steamers sailing from San Francisco to New Zealand and New South Wales by way of Honolulu, all mails made up in the United States destined for the Hawaiian Islands, the Australian colonies, New Caledonia and the islands in the Pacific Ocean, $80,000; provided that said additional sum, with the sum now paid, shall not exceed $2 per mile, etc.

Mr. Elkins quoted from the report of the Commissioner of Navigation concerning the financial embarrassments which now threaten this company, and continued:

"Mr. President, the anticipation of the Commissioner of Navigation as to the establishment of a rival line by the Canadian Pacific has comabout. The British and Canadian governments have established a line on the Pacific Ocean in competition with the Ocean Line, and it is running to-day from Vancouver to Australia. The amendment brought forward by the Committee of Appropriations is to save this line, if possible, from being driven off the ocean by British competition.

"In 1895 we paid for carrying foreign mails $1,173,561. Of this sum there was paid to American ships for carrying the mails $633,350. This is the only compensation that the American ships got during that year. In the same year England paid for carrying the mails about $3,885 000 and suffered an actual loss in this branch of her service of $2,225,000; that is to say, the mail service cost England $2,225,000 more than she received.

"American citizens have only two steamship lines on the Pacific Ocean. One is the Pacific Mail, running from San Francisco to China and Japan, which receives a subsidy of $6,384 per trip; the other, the Oceanic Steamship Co., receives about $5,000 per trip from the United States. The British and Canadian lines on the Pacific Ocean to China and Japan from Vancouver get $400,000 a year from England and Canada, or $30,767 a trip. How is the Pacific Mail Steamship Co. to survive this sort of competition? This company gets $6,384 per trip while the one of the British company gets $30,767 for like service, and the other, to Australia gets $175,000 per year. How can the American line successfully compete against such odds? It is impossible.

"Only the other day it was decided to establish a fast steamship line from Halifax to Queenstown, and tenders have been invited to build this line, which

is to consist of four first-class ships, as good as the Teutonic, to run 20 knots per hour, of 8,500 tons burden, and to make the trip in 5½ days, It is to get from the Canadian Government a subsidy of $750,000 and from England $350,000 a year, a total of $1,100,000 from these two governments, *nearly as much as all the American ships get for all the mails they carry!*

"This fast line is to connect at Halifax with the Canadian Pacific Railroad, and at Vancouver the road is to connect with the Canadian Pacific steamship lines to China and Japan and to Australia. It is both a railroad and a shipping enterprise and threatens the interest of the United States.

The Canadian Pacific Railroad has been styled the Canadian Government on wheels, oiled and pushed by England. I make no snch statement. But I do say it is the natural enemy of the transportation interests of the United States, and it stands to-day as our greatest commercial antagonist. It violates our interstate commerce law with complacent indifference; it cuts rates, and it takes freights from our Pacific railroads, in which the United States has a direct interest. This cutting of rates, this violation of our interstate commerce law, this invasion of our trade, should be stopped, and we can do it; we have the remedy in our own hands. All we have to do is simply to discontinue the bonding privilege, under which they carry goods in bond, starting from Vancouver, to Europe and points in the United States. I would suggest that we stop every car and break every consular seal at our frontiers beyond Chicago and the Sault. This would throw the trade from Asia to San Francisco and pass it over the Pacific railroad lines.

To oppose this active, open and oppressive hostility to American trade, American steamships, and American railroads by England and Canada is the kind of Monroe doctrine I favor. And I am sure it will have better results to our people and their interests than a dispute with England over an obscure boundary in a foreign country 3,000 miles away. The United States, in my opinion, should at once withdraw this bonding privilege to the Canadian Pacific.

In 26 years we have collected from the tariff $4,000,000,000. That is an appalling sum. Our people have paid out to foreigners for foreign shipping about $4,100,000. The larger part of this vast sum could have been paid to our own people. It should have been kept in our own country, and would have been if we had extended the proper protection to American shipping.

From 1848 to 1891 Great Britain paid in the way of subsidies and mail pay to her steamers $197,027,789, while the United States paid in the way of mail payments and help only $25,545,330; that is to say, $8 to $1 to support her shipping. We can not cope with England by subsidies at this late day. She is too strongly intrenched and established on the seas. It would take 50 years, if we should match our Treasury against England's, to even catch up or be on an equal footing with her in shipping and as a maritime power.

The best plan that suggests itself to my mind is that we should go back to the teachings of our fathers, and that we should restore the old discriminating duties; that we should impose a tax of 10 per cent. ad valorem, in addition to whatever tax is imposed by law, on all goods, wares and merchandise imported into the United States in vessels not of the United States. It seems to me that this would settle the question upon the best possible basis and in time revive and restore our shipping.

"We began our Government with protection to American manufacturers and likewise with protection to our shipping interests. We have continued, under constant assaults, however, protection to our manufacturers, and the result is that we are the leading manufacturing nation of the world. At the end of twenty-six years of protection to shipping, by the persuasion of England we abandoned it. What is the condition now? Had we continued throwing around our shipping the same protection we afforded to our manufactures, our shipping interests would be in just the same condition that our manufacturing interests are, and we should be leading the world in shipping."

Mr. Elkins then continued, giving some sad statistics and instances to show how the American flag has almost disappeared from the high seas. Senator Elkins understands his subject, and in him American shipping interests have an able and eloquent pleader,

NEWS AROUND THE LAKES.

CHICAGO.

FIRST DOWN-LAKE MOVEMENTS EXPECTED THIS WEEK —LOW WATER AT MANISTEE—GENERAL NEWS FROM THE LAKE METROPOLIS.

Special Correspondence to The Marine Record.

CHICAGO, April 14.

Capt. C. Gnewuch, of the steamer Edward Buckley, which arrived here from Manistee last Thursday, reports that at the present time the depth of water in Manistee River does not exceed 10½ feet, which is 20 inches less than last season. There has been an appropriation of $24,000 made by the government for dredging purposes and it is hoped the work of dredging will soon begin.

The steamer Edward Buckley looks as good as new in her fresh coat of paint.

Thomas Bagley, yacht and boat builder, is very busy this spring. He is building four lifeboats of cedar, 26 feet long, 7 feet wide, 3 feet 8 inches deep, with air compartments fore and aft, and air tubes under seats at the sides, and two yawl boats of cedar, 14 feet long, 4½ feet wide 22 inches deep for the Goodrich Transportation Co.; two lifeboats of cedar 22 feet long, 6 feet 2 inches wide, 2½ feet deep, with air compartments forward and aft, for the steamer Manitou; three supply boats for the Eleventh Life-Saving District; one radix center-board dinghy for Dwight Lawrence's yacht Mystral, and one gig for the same; two clinker-built yawls for Hart's Steamboat Line, Green Bay; seven hunting boats for the Tolletson Club, Tolletson, Ind. He will lengthen amidships a 42-foot steam-launch owned by the Columbian Launch Co. and will also lengthen the steam-launch Jennie G. 10 feet. He will build a hunting boat for Dr. C. W. Lichlenburg, of Chicago, for use on Camp Lake, Wis., and a center-board sloop yacht 44 feet long 7½ feet wide and 2½ feet deep for Mr. Rosing, of Chicago. Also one 18 foot long cat boat for Dr. Tyrrell, of Elgin, for use on Geneva Lake, and one 18-foot long sloop yacht for the Columbian Club, Fox Lake, besides several yawls for steamers and schooners.

Beeson's Marine Directory, formerly published at Detroit, but now a Chicago publication, will come from press promptly May 1, as promised, and from advance sheets it is easy to see it will surpass any former edition of the work.

The tug Peter Dalton, of the Independent Tug Line, was burned and sank in Lake Michigan off Chicago, Saturday night. The tug was towing the schooner Dewey from Kenosha, where they both had been on a wrecking expedition and had raised the boiler of the old steambarge Johnson, which went down off Kenosha several years ago. The fire on the tug was discovered when she was off Rogers' Park, and it spread so rapidly that Capt. Tom Barry and her crew were compelled to leave and go on board the schooner. Soon after they abandoned her the tug Welcome, bound for Milwaukee, arrived upon the scene and took the Dalton in tow with the intention of bringing her into the harbor; but the flames spread so rapidly that she sank after she had been towed about two miles, after which the Welcome went back to the schooner and towed her into port. The Dalton was partially insured against loss by fire.

The Independent Tug Line have purchased the tug Crawford, formerly of the Chicago Towing Co., from John Crawford. The consideration was $4,000. The Crawford was the flagship of the Chicago Towing Co.'s fleet and a year or two ago, in an article in the Scientific American, she was described as being the most powerful tug for her size in the United States.

The Independent Tug Line are making preparations for leaving their present offices and removing into their new offices. They having leased the offices now occupied by the Vessel Owners' Towing Co. and which they will vacate May 1st.

The Independent Tug Line towed the whaleback No. 130 to Armour's E and the Indiana elevators; the schooners Michigan to the Atlantic elevator; the schooner Sciota from Milwaukee to the Calumet elevator at South Chicago.

The Dunham Towing Co. towed the steamer R. P. Fitzgerald to the Minnesota elevator; the steamer John Mitchell to South Chicago; the steamer John Harper and George Hadley to the St. Paul elevator; the steamer Lehigh to the Galena elevator; the steamer Harlem and Portage to the Rock Island elevator; the steamer Syracuse to the Illinois Central elevator.

J. A. Calbick & Co. sold the steamer City of New York for the Chicago Lumber Co. to Capt. Thos. Currie, of Port Huron. Consideration, $8,000.

Capt. John Prindiville sold the steamer M. C. Neff for the Hines Lumber Co. to Cleveland parties. Consideration, $15,000.

H. W. Cook & Co. chartered the steamer City of Glasgow for oats at 1⅛c and rye at 1⅝c, South Chicago to Buffalo.

C. W. Elphicke & Co. chartered the schooner Michigan for 90,000 bushels of oats to Buffalo at 1¼c; the steamer Charles A. Eddy for $8,000 bushels of wheat to Toledo at 1¾c; schooner Plymouth for corn to Ogdensburg at 3⅞c; steamer George Hadley, for wheat to Toledo at 1⅝c.

The steamer John Harper, Capt. Mills, will probably be the first of the grain fleet to leave this port this season. She is bound to Fairport and is expected to leave on Wednesday night or Thursday morning of this week.

The Board of Marine Underwriters has adopted a new system of classification. Grain-carriers are divided into three classes, with cargo rates as follows: First-class—All steamers rating A1 and A1½, and liners of A2 rating, with average waived to December 10, a flat season rate of 30c per $100 to Buffalo and 25c to Port Huron, and 40c to Lake Ontario. Second-class—All A1 and A1½ sail and tow with average waived to December 1, a flat season rate of 40c to Port Huron, 45c to Lake Erie and 55 to Lake Ontario. Third-class—A2 vessels, steam, sail and tow, a sliding scale, as follows; to Lake Erie, to September 1, 50c; September, 70c; October, $1; November, $1.50; to Port Huron, and Sarnia to September 1, 45c; September, 65c; October, 95c; November, $1.40; to Lake Ontario, to September 1, 60c; September, 90c; October, $1.25; November, $1.80. To Montreal the rate on all classes is uniformly 10c higher than to Lake Ontario. The new rate is 5 per cent advance over last season on A1 boats.

Capt. Wm. S. Mack, of Cleveland, arrived here Tuesday to see about sending off his fleet.

J. J. Rardon & Co. chartered the steamer Argonaut for corn, South Chicago to Port Huron at 1½c; schooner Scotia for corn, South Chicago, to Ogdensburg 3½c.

Joseph Roy, the second engineer of the steambarge Charles Hebard jumped into the river from the deck of the vessel Friday and rescued Charles P. Mitchell, No. 114 North Clark street. THOMAS WILLIAMS.

DULUTH AND SUPERIOR.

WHEAT FREIGHTS BADLY MIXED UP—GOSSIP ABOUT NEW BUILDING PROJECTS—VESSEL MEN STIFF ON LUMBER RATES.

Special Correspondence to The Marine Record.

DULUTH, MINN., April 14, 1896.

Navigation is now open at the head of the lakes. The passenger steamer Hiram R. Dixon. Captain J. H. Hector, the "Fog King," in command, left Duluth for Port Arthur and intermediate points Sunday. She carried in all about fifty passengers, among whom were thirty explorers, who will explore the country along the north shore of Lake Superior. In addition to these, Mr. G. H. Fedtman, of London, Eng., president of the Wenango Copper Co., and general manager of the Isle Royale Improvement Co., and party were on board. The Fedtman party took with them material for the extensive improvement of the old mines on the island, and they will develop the mineral resources of all the country thereabouts on the Canadian side this summer.

Williams, Green & Williams sent a supply of dredging and dock timbers by the Dixon for improvements at Two Harbors.

The past week has been an eventful one in the matter of wheat rates. So eventful, in fact, that the market seems to be in a somewhat befuddled condition at this writing. A joke and a telegraph error are the causes which have brought this state of affairs about. Early in the week a message was sent out from Cleveland stating that shippers were offering 3c for two trips to Buffalo. Immediately messages offering tonnage, single trips, at the same rate began coming in. When investigation was made it transpired that the whole thing was a joke. A Cleveland man, who is interested in some boats that are wintering in Chicago, was in Duluth, and during a conversation with a shipper, the latter offered 3c for two trips to Buffalo. The vessel owner telegraphed the home office at once and the message heretofore spoken of was the result. After the shipper discovered that his offer had been taken in earnest—he claiming that he was joking—he commenced to back water. The vessel owner wouldn't have it that way, however, and said that he would keep him to his bargain. The shipper thereupon said all right, but stipulated that the boats must come here light from Chicago. This put another face on matters and the deal was declared off. The last of the week furnished an incident that capped the climax, however. All of the daily papers in the principal lake ports printed a statement that shippers at Duluth were offering 3½c for tonnage to Buffalo. The news spread fast, and in a very few hours shippers here were flooded with offers of tonnage at 3c for single trips. The facts were that the rate was inactive at 3c, and it was so sent out from here. The telegraph twisted it, however, so that it got to the papers as 3½c instead of 3c. Shippers and vessel agents are now trying to find out where they are at.

The Knox Lumber Co., has sold 5,000,000 feet of lumber to the Eastern Lumber Co., of Tonawanda, N. Y., to go forward during the spring season, as soon after navigation opens as possible.

There is a rumor afloat here to the effect that the Omaha road has made a contract with the American Steel Barge Co. for four steamers for freight service between the head of the lakes and eastern ports.

Colgate Hoyt, president of the American Steel Barge Co., was in Superior last week. He said to the correspondent of the MARINE RECORD that the company would at once begin the construction of two whalebacks to replace these recently sold to the Bessemer Steamship Co. He also said that the company was figuring on building another dry-dock at Superior, He is of the opinion that this year will be a very prosperous one for boat builders and said that the large company would in

all probability increase its working force in the yards at Superior to a thousand men before the close of navigation.

Another report has it that the Duluth, South Shore & Atlantic road is negotiating for a line of new boats to be operated in competition with the Northern Steamship Company.

The unsettled state of affairs on the Mesaba range is creating some unsasiness among vessel owners. There is every probability that a strike will take place among the miners next week. This, together with the allotments, puts the ore situation in a rather dubious light. No tonnage, as far as can be learned, has been taken for ore to go forward at the opening of navigation.

Mr. John Gordon, Jr., was asked last Monday in regard to his and his father's plans for the future. He said that he had nothing to say at present, but he intimated, however, that neither he nor his father intended to quit the field. He said he would probably have something to say in the course of a few weeks.

The returns of the railroads for the month of March show a most gratifying gain in nearly all kinds of traffic handled at the cities of Duluth and Superior. The coal and coke traffic had its share of the increase. There were 19,209 cars of all kinds of commodities, except logs, handled on one line, and of this, 6,806 cars were loaded with coal and coke. Contrast this with a total of 15,194 cars a year ago, of which 5,567 were coal. The month, although generally considered a poor one for the fuel trade, showed up well in comparison with the cold months of February and January, which did a coal business of 7,106 and 9,041 cars, respectively, and a total business of 17,572 and 17,558, respectively. Nearly all the increase is credited to the Superior docks. Last year the proportion was 1,904 for Duluth and 3,663 for Superior. The change in the Northwestern Fuel Company's system is responsible for much of the change in proportions.

Commodore B. B Inman has announced his office fleet appointments for the coming season. The commodore will as usual manage the fleet. The appointments are as follows: H. G. Inman, secretary and treasurer; John R. Gillett, bookkeeper; George W. Beresford, day dispatcher; John W. Dempster, night dispatcher; James H. Bishop, chief engineer.

Vessel men still hold out for $2 on lumber, while shippers, as a rule, are offering from $1.75 to $1.87½. Vessel agents are likely to hold out for $2 until the ore question is settled, and there is not much prospect of the rate getting much lower.

E. E. B.

PORT HURON.

STEADILY FORGING TO THE FRONT AS A RECEIVING PORT—LIFE-SAVING STATION MOVEMENT—WEATHER SIGNALS TO BE DISPLAYED.

Special Correspondence to The Marine Record.

PORT HURON, April 14.

Port Huron is slowly but steadily availing herself of the advantages her position at the foot of deep water navigation affords her. This was especially evident last fall, when the low water in Detroit River, coupled with the comparatively slight difference between this port and Lake Erie in the price of fuel made it profitable for large freighters up bound to fuel at Port Huron, being able, by this means to float from 150 to 200 tons additional freight over Grosse Pointe.

In response to a petition from the local Ship Masters' Association, and from vessel owners, the Weather Bureau has established a signal display and information office at the coal docks of J. E. Miller & Son. Signals will be displayed from the top of the coal chutes, and the firm announces that vessels are free to tie up at their dock during thick or threatening weather.

Gen. Supt. Kimball, of the Life-Saving Service, has made a report to Congress in favor of the proposed life-saving station at Fort Gratiot. He says: "obviously the design of the bill is to afford better protection against loss of life and property from shipwrecks occurring in the neighborhood of the southern end of Lake Huron and the head waters of St. Clair River, which flows from the lake. The locality is a dangerous one, the statistics on file in this office showing that within the last ten years, fourteen disasters have occurred in its neighborhood, and five lives have been lost. Several other persons barely escaped. The loss of property is estimated at $35,805. In my opinion a life-saving station established in the vicinity would promote the interests of commerce and humanity." The House and Senate Committees have both reported favorably on this bill.

The Arundel is running regularly and bringing in large quantites of freight.

Several cargoes of coal have already arrived this spring.

Lightship No. 61 will go into commission at the foot of Lake Huron this week.

The Thomson line of steamers will be officered this year by the same crews as last season. The Pilgrim, captain, Eugene Hayward; mate, J. E. Meno; chief engineer, Joseph Meno; steward, Harry Thomson; purser, Harry Knapp. The Douglas, captain, F. J. Meno; mate, John Heythaler; chief engineer, Joseph Paya; steward, S. S. Murray; purser, A. N. Knapp.

KENDALL M. R. Co.

BUFFALO.

LOOKS MORE LIKE OPENING AT THE FOOT OF LAKE ERIE —HEAVIER RECEIPTS OF ORE MOST LIKELY.

Special Correspondence to The Marine Record.

BUFFALO, April 14.

Such a change as there was! The prediction of no opening until after the 20th was in everyone's mouth, when Old Sol opened up for business on Sunday, and before Monday noon all the wise ones were declaring that they had said "of course, unless there came some hot weather." Its all right, though, for the oldest inhabitant never claims that he or anyone else ever hit it. They are always just going to.

Connelly Brothers did not launch their barge at Marine City last Saturday as expected, but will get her into the water this week Saturday. The plan is to have her christened by John Connelly's little son Willie. She is to be named Connelly Brothers and will go into the Wotan tow. Those who have seen her say that the builder, Anderson, has made an exceptionally fine job of her.

Buffalo is "looking" at Cleveland just a little. First that enterprising marine center went into the canal business and built a big steel canal fleet, for carrying iron manufactures, it was said, but now it is announced that this was a sort of masked battery, and when the falsework is taken away behold Cleveland a grain-shipping port. Well, come on. If Cleveland can handle grain cheaper than we do we will have to "see" her, and if she can't there will be an end of the talk about the transfer rates having anything to do with business over the canal.

It is never really safe to put a story into print till you have heard it two or three times. Such surprising new versions as one will get! On Monday morning it was reported that the Reading people had got ready to take some coal tonnage. Coal men said so and brokers had heard of it. But when Mr. Kennedy was found and put on the stand about it he said that the trestle was surrounded with vessels that he could have, but that he was not prepared to take any tonnage unless some one was anxious enough about a load to take one under the asking rate.

Capt. Jack Green came back from his winter in California last week, in the best possible frame of mind. It is no small superiority over the general run of people to be able to take in the Pacific Coast every winter, though the Captain is always on as good terms with other folks as he is with himself, and doesn't look over their heads if he can help it. Still he did have to say a word for the climate and the feed of the Los Angeles district. If it was too hot, climb up the mountain a little; if it was cold, go the other way. It was all there. And then the game. If you wanted any go out and shoot it. "I did think of you once or twice, Frank," said he to an old chum of his, "when I was eating wild goose and knew that you were back here living on nothing but woodchuck."

The marine interests of even this port are probably not aware that we have a remarkably large single interest in the tug business here, and all for carrying on contract work. Hingston & Woods own eight tugs and use them. They have four here and one each at Oswego, Erie, Conneaut and the Sault. The work at Oswego has not begun yet, but will be in shape soon. At Erie they have been at work for several days and more or less work has been done on the Conneaut-Port Dover job all winter. International relations are such that the firm has to use a Canadian tug at Port Dover or go to the expense of changing the nationality of one for that purpose.

There is promise of a still better ore season at this port than last season was. The three ore-handling companies have now only 19,700 tons on dock altogether, and at least one of them has everything ordered out. The amount held by the blast furnace is not counted, as that is supposed to take only what it consumes. As the Lackawanna ships everything out as it comes in this leaves only Pickands, Mather & Co., Wick & Co. and the Lehigh as stocking shippers. The Buffalo, Rochester & Pittsburgh must now be added.

Russell & Watson are very busy this spring. They have installed the lamps and ranges on the big steamer City of Buffalo, now nearing completion at Detroit, and have put lamps and ranges on three schooners and one steamer (Nos. 17, 18, 19 and 20) building at the Chicago Ship Building Co.'s yard. They have also put a new range on board the Schlesinger, and have taken the stoves out and replaced them with steam heating apparatus on seven package-freight steamers now lying here.

The members of Buffalo Harbor No. 41, American Association of Masters and Pilots of Steam Vessels, are so well pleased with the organization that yesterday they sent to Mr. B. F. Perkins, organizer of the "harbors" at the different lake ports, a beautlful souvenir. The memento is a 14-karat gold badge. From the bar is suspended a buffalo. The buffalo is exquisitely wrought, the eyes being small garnets, while above it is a pennant of enamel on which are the figures "41." Harbor No. 41 held a meeting Monday night and about 13 members joined. The harbor at this port now has over 100 members.

Lake line wages have been advanced about 5 per cent over the pay that has ruled for two years. First mates will get $77.50 per month; second mates $59; wheelsmen $32.50; lookouts $28.50; watchmen $28.50; deckhands $15. The pay of the interior force will be: chief engineer, $108; second, $66; second assistant, $38; oilers, $32 50; firemen, $32.50; steward, $56.50; waiters and porters, $23. Firemen remaining on board all season will be given a bonus of $5 per month.

At least some of the Northern Steamship Company's employes are not screamingly pleased over the moving of the offices—what is left of them—up town. The Birge Building is all right so far as it goes, but the new quarters in it are small, badly lighted and not ventilated at all, except in front and rear.

The Weather Office force is, on the other hand, smiling all over. It has not only the most sightly office in the city, but the owners of the new Guaranty Building offered some surprising inducements to get the Government people. One of them is the furnishing of electricity free for lighting the night signals with. Some of the most advanced signal apparatus has just been received and as the lights are so high up and will be so bright they ought to be seen by lake men a long distance out.

Until Buffalo takes in Tonawanda, the arrival of the steamer St. Louis from the lumber city last Friday will have to be called the first of the season, The trip was, however, much the same as would have to be made from the Calumet to Chicago river, except that it is not all on the same level.

It is learned that Martin Riesterer, who bought the Prindle tow at Tonawanda, is a stock owner in the Tonawanda blast furnace, so it is shrewdly guessed that the tow will spend the rest of its days carrying ore.

The Cleveland & Buffalo line dock and warehouse is beginning to look like business on a new plan. A solid new dock will in a few days be backed by a waiting room, a part of the office accommodation that will be a vast improvement to the old style of things. It goes without saying that the line is here to stay, and when the new City of Buffalo gets here the old fashioned palace boats will be running again between the two cities.

JOHN CHAMBERLIN.

CLEVELAND.

D. & C. FREIGHT HOUSES DAMAGED.—GENERAL NEWS OF THE PORT.

CLEVELAND, April 16.

The schooner Sandusky, which was coming down the river Tuesday after loading with coal, failed to make the turn quickly enough after passing through the Superior street viaduct, and stuck her horn into the Detroit & Cleveland Steam Navigation Co.'s freight sheds. The jibboom pulled out, and the building was damaged considerably.

The arrivals and departures are beginning to increase iu number, and a few days will see boats setting out for the upper lakes.

The John H. Pauly will run on the Cleveland-Saginaw route in the package-freight trade, stopping at Detroit, Port Huron, and one or two intermediate points on Lake Huron.

The Long coal car dumping machine at the Erie dock, has been fitted with telescope chutes, which greatly facilitates loading.

John Hemmer, of the life-saving crew, has accepted a position in the Detroit River Mail Service. His place here has been taken by J. E. Tucker, who has for eight years been a surfman in the Sand Beach crew.

We regret to have to note the death of Capt. John A. Donahue, who last season sailed the steamer R. P. Ranney, of the Bradley fleet. Capt. Donahue died Tuesday, and his funeral will occur to-day. He has been for years in the Bradley feet, and was one of the most capable masters on the lakes. He was a member of Cleveland Branch No. 4, of the Ship Masters' Association.

DETROIT.

WHITE STAR LINE INCORPORATED.—OFFICERS OF PASSENGER BOATS.—INDUSTRIAL.

Special Correspondence to The Marine Record.

DETROIT, April 14.

The White Star line has been incorporated to operate the steamer City of Toledo, by A. A. Parker, 113 shares; Byron W. Parker, 112; John Pridgeon, J. R., 113; Charles F. Blelman, 113; James W. Millen, 38; George M. Black, 37, and A. A. Parker, trustee, 74. It has a capital of $85,000, of which $36,000 is paid in.

The Fulton Iron and Engine Works, has been awarded the contract for the construction of an iron beacon at the light station at Chequamegon, Wis., at their bid of $862.

A quick job of making and plabing a boiler was done by the Detroit Dry-dock Co., recently on the steamer Progress. Within 90 days from the receipt of the order her old boiler was removed and a new one made and put in place.

The inside officers on the pool river steamers are as follows: Grey-hound purser, A. H. Cramer; steward, J. H. Kernahan; Darius cole-purser, T. D. Whelan; steward. Robt, Kernahan; City of Toledo purser, Fred Whitney; steward, Archie Hall; Arundel purser, L. Lewis; steward. W. H. Putnam; Idelemlo purser, Edward Wells; steward, W. O'Brien.

The Grand Trunk Railway again offers for sale the car ferries Huron and International. A full description of these steamers will be found on page 16.

LIGHTHOUSE AND BUOY ILLUMINUTION.

(CONTINUED FROM PAGE THREE.)

lights. Some years must have elapsed before we shall witness the comp'ete consummation of this much-to-be-desired attainment. The United States Government has expended over $100,000,000 on its lighthouse and buoy system since its establishment, and each year witnesses an increase of appropriations for the extension and improvement of the system. The earliest

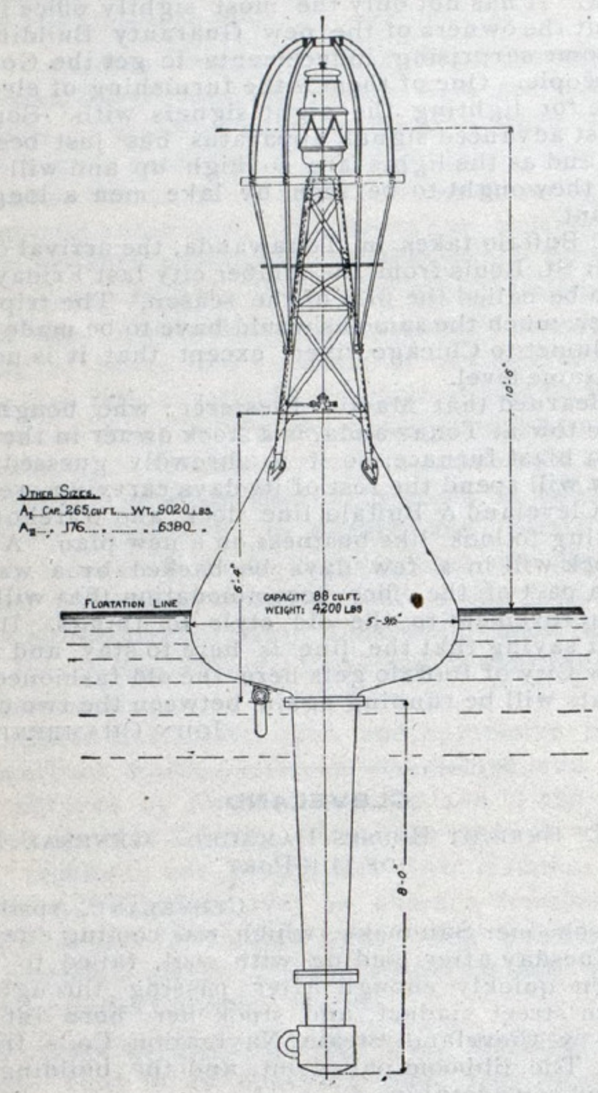


FIG. 1.

effort made in the United States to employ gas as an illuminant in our light-houses was the attempt to use it in the Christiana light-station near Wilmington, Del., in 1844, when rosin gas was used; but after about a year's trial this attempt was abandoned as unpractical. Later another unsuccessful attempt was made to light with gas a station at Reedy Island, at the mouth of the Delaware River.

In view of the successes more recently made in the use of gas as an illuminant for lighthouse purposes, it seems safe to assert that those in charge of the above-mentioned operations were not familiar with the proper method for the application of gas to the service. At one time the lighthouse on Lake Erie at Cleveland used gas; but now coal oil supplies the illumination thereat. The lighthouses at Newburyport (Mass.) outer harbor, inner beacon, and Jones Point (Alexandria, Va.) still use illuminating gas. At Currituck Sound (N. C.) compressed gas is used as an illuminant for ten lights at the northern entrance to that Sound. This gas is made at Long Point, immediately adjacent to the lighthouse, in gas works owned by the government. The gas is carried to each of the beacons in tanks built into a scow, which is towed by a steam launch manned by the keepers of these ten lights, who reside on board. The gas in each will burn for ten days and nights if need be.

For various reasons gas has not thus far made mu h progress against oil for lighthouse illumination, due largely no doubt to the difficulties attending the procuring of adequate supplies of gas; but before long it seems to us that compressed gas must find its way into this service, when a decided revolution in existing modes of lighthouse illumination must follow.

The beacon on Romer Shoal in New York harbor is lighted by the compressed gas apparatus of the Pintsch system. This structure is an iron pier 30 feet in diameter and 16 feet high, surrounded by a skeleton iron tower 25 feet high, from which is shown a fixed white fifth-order light, the focal plane of which is 41 feet above low water, and which should be visible about 11 miles. It was first lighted on the 15th of July, 1886. It lighted with compressed gas from a tank which holds about 90 days' supply. The cost of maintenance has been very slight, no keeper being necessary, and the most favorable reports have been made as to its efficiency. The accompanying letter, which relates to the light on the Scotland Lightship, amply attests the valne of gas-lit buoys:

TREASURY DEPARTMENT,
OFFICE OF THE LIGHTHOUSE BOARD,
WASHINGTON, January 31, 1882.

SIR: The Lighthouse Board has the honor to acknowledge the receipt of department letter of January 9, transmitting for reply a resolution of the Senate of the United States, of January 6, requesting any information in the possession of the Board regarding the Pintsch-lighted buoy, which has been in operation at the entrance of the harbor of New York during the past summer, and any recommendation which the Board may desire to make in regard thereto.

In reply I beg to state that the buoy referred to was placed on position near the wreck of the Scotland Lightship on the 28th of July last, and was taken up about the 21st of November, during which time the light was not extinguished from any cause. Several gales were experienced during this period, and the sea has been known to wash completely over the buoy and lantern without extinguishing the flame; and from the observation made the conclusion has been reached that the light cannot be extinguished by the sea breaking over it, or from the force of the wind, and that it will show a good light so long as there is any gas in the reservoir. Very respectfully,

(Signed) GEORGE DEWEY,
Commander U. S. N., Naval Secretary.

To the Hon. Secretary of the Treasury.

In 1885 the British government created a commission to inquire into and report upon the relative merits of electricity, gas and mineral oil as lighthouse illumin-

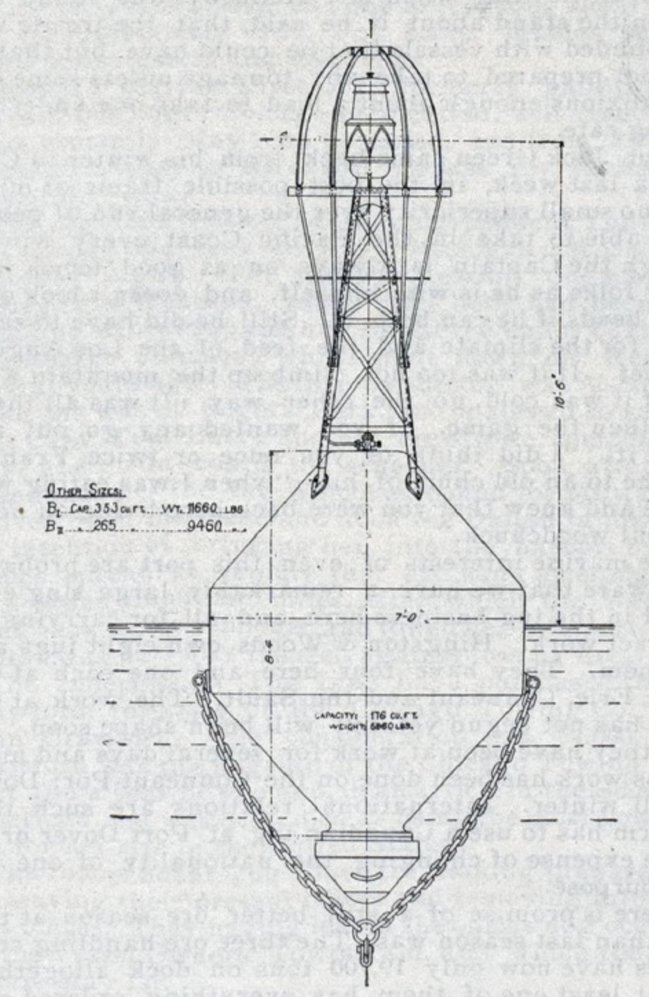


FIG. 2.

ants. It was composed of eminent scientific experts. Every conceivable condition was experimented with and the conclusion reached was, that under the most adverse of conditions—dense fog—all lights are useless to navigators, and that the most powerful illuminant—electricity—was reduced to a nominal and unsatisfactory element equally with the gas and oil illuminants.

For some years past the Lighthouse Board has been trying to obtain from Congress appropriations for electric light buoys. The only buoys of this kind now owned by the government are those, nine in number, which mark the channel from Sandy Hook to the entrance to New York Bay. Electric buoys were established temporarily along the lake front of Chicago during the World's Fair. Electric lights for lighthouses and buoys have not proved wholly successful, interruption of current at the central stations being one of the almost insurmountable barriers to its adoption. The tallest skeleton iron tower ever put up by the government was at Hell Gate, New York. It was 255 feet wide and cost about $11,000. It showed nine electric lights, each of 6,000 candle-power, and was designed to illuminate the narrow, tortuous and dangerous channel as by artificial daylight. At night the effect was superb. The tower itself could not be seen and the light appeared as if coming from the heavens. Unfortunately it was so brilliant that it dazzled the eyes of pilots, and prevented them from seeing the objects beyond the circle illuminated. The shadows thrown were so heavy that they had the appearance of obstacles. So the light established in 1884 was discontinued in 1886 at the instance of those who had obtained its establishment. The tower was sold as it stood for old iron, but it was so strongly built that dynamite had to be used to accomplish its overthrow.

The success attending the use of gas-illuminated buoys and stationary beacons has been very great. Pintsch gas buoys were first installed in various harbors along the British coast. At the present time, we find on investigation, the following countries have Pintsch buoys to the total number of 434, divided among the respective nations thus: United States, 43; England, 117; Germany, 53; Holland and Belgium, 30; France, 117; Portugal, 5; Denmark, 15; Russia, 13; Tunis, 11; Sweden, 2; Austria, 1; Italy, 13; and Spain, 14.

A brief description and sectional view of the Pintsch buoy may prove of interest to those desiring to pursue the subject further. The body of this buoy forms the receiver for compressed gas, and is of sufficient size to give proper buoyancy for floatation, and of sufficient strength to hold a pressure of 150 to 180 pounds per square inch. On top of the body is a wrought-iron tower about six feet high, surmounting which is a lantern. Surrounding the lantern is a cage for protecting it, and the platform on which to stand to light or adjust the flames. The buoy is held upright by a counter-weight at its bottom. The gas is supplied to the lantern through the Pintsch regulator, which has earned for itself, in its use in lighting railway cars, an unassailable record. The buoys are of two classes: First, the A class, illustrated by Fig. 1, especially adapted for deep waters; second, the B class, illustrated by Fig. 2, especially adapted for shallow waters. Each style is made in three capacities, and when fixed to 12 atmospheres, will give a light visible for six to eight miles for the same number of days of 24 hours as its capacity in cubic feet. The illustrations give the dimensions of the smallest of each size.

Figure 3 shows in section the construction of the lantern and the pressure regulator. The currents of gas

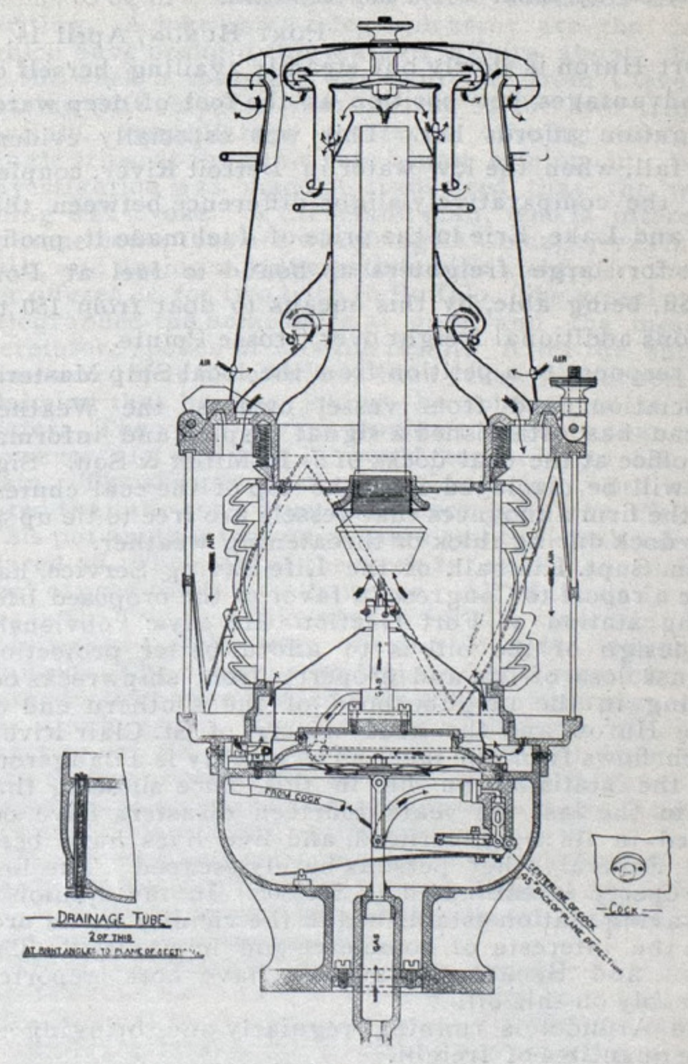


FIG. 3.

and air for combustion through the lantern are indicated by arrows. The light is given by a cluster of four jets, three flat flames surrounding a round central one. A platinum wire is fastened just above the flames, which is heated to whiteness by them, and in case of sudden shock extinguishing the light, relights the flame immediately. Surrounding the flames is a Fresnel lens, securing to this lantern its property of projecting a

beam of light to a great distance. The buoys burn continually day and night without attention, and for from 85 days to one year, dependingupon their size. The cost of gas is less than 7 cents per 24 hours.

The buoys are supplied with gas from the works now established for making compressed Pintsch gas, at the following points: Atlanta, Ga.; Boston, Mass.; Buffalo, N. Y.; Chattanooga, Tenn.; Chicago, Ill.; Cincinnati, O.; Cleveland, O; Council Bluffs, Ia., Detroit, Mich.; Fort Worth, Tex: Jacksonville, Fla.; New York, N. Y,; Kansas City, Kan.; Oakland, Cal.; Philadelphia, Pa.; Portland, Ore; Savannah, Ga.; St. Louis, Mo.; Toledo, O.

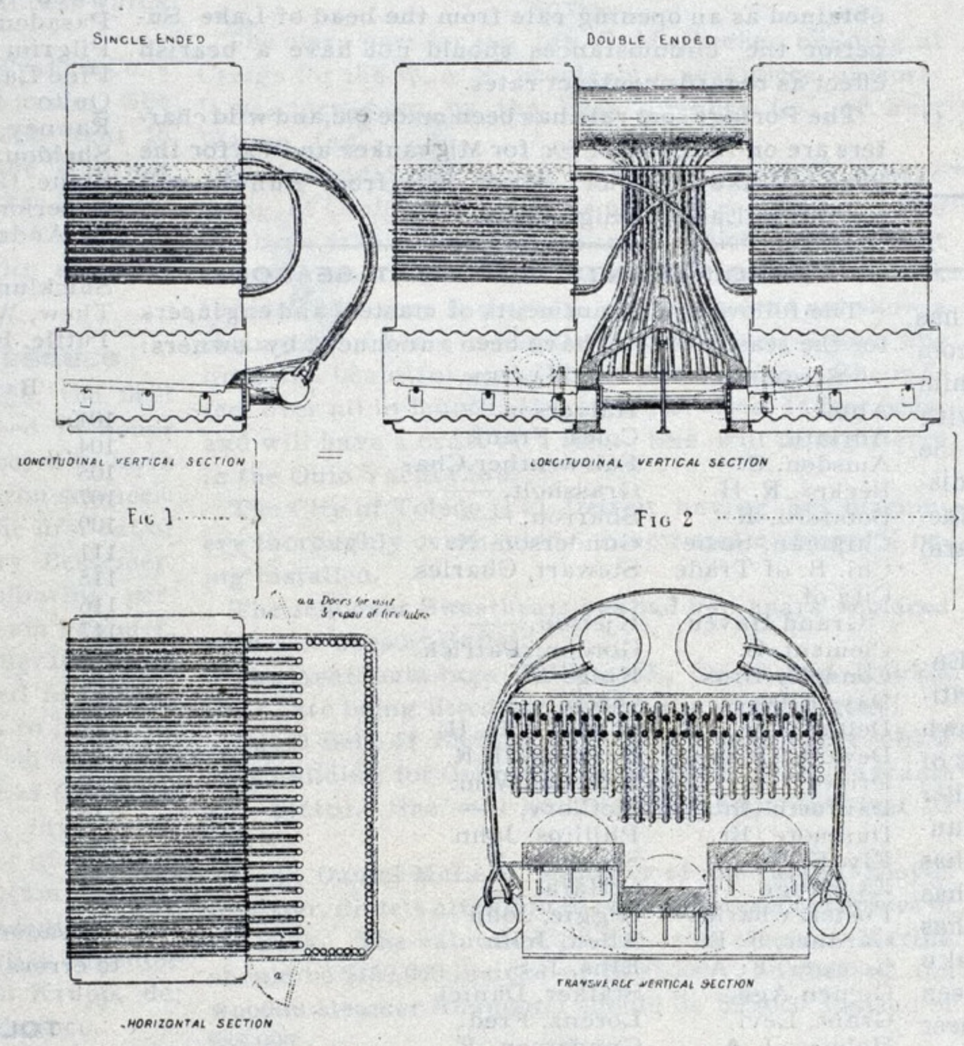
Our system of Great Lakes would seem to offer a fertile field for the gas buoy. The rapidly increasing vessel transportation along these lakes demands quick and constantly safe communication without the innumerable delays which navigation thereon is now obliged to submit to as a result of totally inadequate beacon service at the entrance to the various ports, and it would seem that Congress should recognize the Great Lakes traffic by offering it what seems to have been proven the best and most economical of beacons—the gas buoy.

COMPOUND MARINE BOILERS.*

The steady advance of water-tube boilers in the field of steam navigation has aroused a natural reaction in favor of ordinary marine cylindrical boilers, which, according to many, although inferior in certain respects, possess features of great value for marine purposes not yet fully secured in the new boilers. This view refers to boilers for ships other than torpedo craft, which have requirements that only water-tube boilers can fulfill. Within these limits the contention in favor of cylindrical boilers does not appear groundless. In fact, the marine cylindrical boiler is not a new production of the inventive genius of man, but is the result of the experience of two generations at sea. It is the last stage reached of development and improvement under existing practical conditions, of an engine in the evolution of the entire "organism," the steamship, to which it belongs. And in such a long adaptation to surrounding conditions, the marine boiler, from the early types to the present, has, in effect, developed features of real fitness for ocean navigation and has reached a state of perfection not easy to attain immediately with any new boiler.

The prominent features of the modern marine cylindrical boiler are well known—efficiency, simplicity of parts, firmness of bolted joints, durability, ease of inside inspection, fitness to available space on board ship, small liability to derangement, possible concentration of large power in few bollers, so reducing number and complication of pipes and fittings; steadiness of action by which water, feed and steam pressure are under easy control; facility of repair of heating tubes under steam, etc. Although some of the foregoing characteristics may be claimed also for water-tube boilers of various types, others of them are certainly peculiar to the cylindrical boiler, and it is to these important features that cylindrical boilers owe their success in the domain of ocean navigation and the present campaign in their favor. In this respect it is worth notice that while in France, water-tube boilers of the Belleville and a few other types are in general use, both for merchant and war ships, in other countries the mercantile marine has not shown any marked propensity to abandon its familiar and faithful servant; while the navies, now on the full swing for the new boilers, began really to feel the want of a change only when the cylindrical boilers appeared unsuitable to forced draught. I use the word "appeared" because I think it is not yet proved whether the proclaimed unsuitableness is unavoidably due to organic construction of the boilers or to the magnitude of the extra strain and suddenness with which it was applied before the boilers were given time to adapt themselves to the new demands made upon them. In support of this, the very good results obtained with the Serve tubes and with the Howden and Brown systems of combustion, by which the steaming power of marine cylindrical boilers per unit area of wetted heating surface has been brought up to limits which were but lately deemed dangerous, might be mentioned; but, apart from those arrangements, which if efficient in increasing the specific power of the boilers have certainly not improved them in respect of lightness and suitableness to rapid steaming—which are prominent features of water-tube boilers—it may be asked, have cylindrical boilers reached their last stage of development? Cannot such boilers compete much longer, or must they soon give way to the new comers?

Well, while it is pretty certain that, owing to important advantages which water-tube boilers offer, principally for naval purposes, the difficulties which still retard their general adoption will be vigorously attacked and finally over come, I think from what has been said above, that cylindrical boilers not only have as yet a great power of endurance in the mercantile competition, but that there is still room on their side for further improvement; by which their vitality may be increased, and the struggle prolonged, even for navy purposes, with advantages to the great interests involved. This new vitality may, I think, be conferred on cylindrical boilers by compounding them with water tubes in such a way as to make them partake, to a certain extent, of the good features of the water-tube boilers, without detracting much from their own valuable characteristics. There are already in the market various compound boilers having the heating surface made up both of water and fire tubes, but none of them, so far as I know, may be styled a real compound marine cylindrical boiler. I do not wish to disparage these boilers, which appear very good and efficient, but simply to show that they are not the kind of boiler I mean—a marine cylindrical boiler compounded with water tubes to the extent that is necessary to give protection to the tubes and tube plates, and improve the boilers also in other respects, such as economy of weight, fitness to rapid changes of temperature, etc., but without altering its main characteristics, Such a result may, in my opinion, be obtained by simply doing away altogether with the water spaces around the ordinary combustion chambers, and substituting for them water tubes, some of which would be properly arranged as a protecting screen in front of the tubes and tube plates. My meaning will perhaps be made clearer by reference to figures 1 and 2, in which the proposed alteration is sketched as applied to both single- and double-ended cylindrical boilers. Such boilers, if successful, would be lighter, simpler, less sensitive to difference of temperature, and to rapid changes of fire, while the screen of water tubes in front of the tube-plates would protect them to a great extent from damage under forced draught. The benefit would be largely felt by the merchant marine, on account of the larger interests involved and because of its requirements, to which the ordinary marine boilers appear on the whole, so well suited. Another advantage of the proposed arrangement is the facility of admitting air under the back end of the fire grate, in a proper quantity to improve the efficiency of combustion, through a regulating door fitted under the bridge and beneath the casing of water-tubes forming the combustion chambers. In marine engineering I am only a dilettante, therefore in what I have had the honor to say, my aim has been simply to raise a question which seems important and to merit discussion.



PROPOSED TYPE OF COMPOUND BOILER.

*A paper by Col. N. Solian, Director of Naval Construction, Royal Italian Navy, read at the Thirty-seventh session of the Institute of Naval Architects, at London, in March.

AMERICAN ASSOCIATION. MASTERS AND PILOTS

OF STEAM AESSELS OF THE UNITED STATES.

The objects and aims of the national Association of Masters and Pilots are manifold, and as it becomes known, it is commended by the owners of steam vessels and the travelling public, from the fact that its principles are of the best that can be devised, in which it seeks to elevate the members of the profession morally and mentally, to care for the sick and destitute. It being national in scope and character, extending its influence over the entire United States, every port on the Atlantic Pacific and Gulf coast with the Ohio and Mississippi river, having a prosperous and well organized Harbor of the association—a member going from one port to another will always find friends and be cared for if sick or in distress, and every effort will be made to give employment to those unemployed.

The insurance features of the association are indeed broad and liberal in every respect. The assessments are 25 cents levied on each member in the insurance for every death or total disability. Any member having joined the insurance and who may wish to withdraw, can do so, and still retain his membership in the Harbor to which he may belong, and has the privilege to return and take out another policy at any time he may so desire. A member becoming disabled by accident or his eyesight becoming impaired so that he will not be able to follow his vocation as a master or pilot or mate, constituting a total disability for such, he is entitled to the whole amount collected and thereafter becomes an honorary member, but still retains his full membership in his Harbor and is entitled to all the benefits prescribed by the by-laws of his Harbor.

The association desires and endeavors to bring into membership every president, general manager or Superintendent of steamship or steamboat lines who has a license, even though it be a special license, so that it may be shown them that this association of Masters and Pilots has been organized largely in their interests and that the best material of our profession are in the Harbors—from which they may select to fill the positions they may have to give, and that the members will do their utmost to build up their interests in every way by giving good and efficient service for remuneration received. The association in nowise interferes with the wage question; it will always be found on the side of their employers in defending their interests in matters of legislation. Many wealthy and influential men who are largely interested are members of the association, and their presence gives tone to the association, and a status that could not be secured without their membership. The personal of the organization is elevated thereby and its success assured.

There is now five subordinate Harbors on the lakes, as follows: Chicago Harbor No. 34, Sangatuck No. 44, Buffalo No. 41, Cleveland No. 42, Toledo No, 43. Eight New Harbors have been organized since February 1st, 1896, and it is expected that every port on the Great Lakes will establish a Harbor of this association during this year.

Tne U. S. Weather Bureau will resume the display of wind signals on Lake Superior May 1, and resumed on the other lakes April 10.

We stated last week that Capt. A. C. Ackerman was master of the Lora. Capt. Ackerman has had her through the winter, but her master for the coming season will be Capt. M. A. Tuttle.

MARINE RECORD

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CLEVELAND, O., APRIL 16, 1896.

COMMANDER W. W. MEAD'S term of shore service has expired, and Commander W. M. Folger, lately in com mand of the Yorktown, has been detailed to succeed him as inspector of the Eleventh Lighthouse District, with headquarters at Detroit. Commander Mead goes to the Norfolk navy yard as equipment officer. He has discharged his duties on the lakes to the complete satisfaction of all the marine interests, and has made many warm friends, who will be sorry to see him go.

IT seems that President Uhler, of the Marine Engineers' Beneficial Association, has been severely criticized in a few quarters on a claim that he has shown poor judgment in conducting the legislative interests of the organization of which he is in charge. This is rather surprising news, and, if true, is rather hard for us to understand. It is the first time that President Uhler has had to be "called down" for the manner in which he has "engineered" legislation pending in Congress, and he has had several years of experience in that line. He has also been closely associated with and has undoubtedly been acting under the valuable counsel of Chief Engineer George W. Melville, of the Navy, and it would seem that people who are "on the inside," so to speak, should know their business better than their would-be mentors.

THE Detroit Marine Postoffice, which was so successful last year, will be carried on in much the same manner this season, a special appropriation for this purpose having been made by Congress. It is learned, however, that the Department proposes to pay only $50 per month to the boat men who deliver the mails aboard the ship. Anything like parsimony in this branch of the service will not only result in poor handling of the mail, but by employing men who are willing to work for such wages, the Postoffice Department officials are likely to have on their hands the responsibility for one or more lives lost in the service before the summer is over. This work is extra-hazardous, and it would seem that if the Postoffice Department can afford to pay $75 to $90 per month to carriers for delivering mail through the streets twice and four times a day, it could see its way clear to pay at least $80 per month to a man who is required to take the greatest risks to place mail on board rapidly-passing vessels. The men who are capable of this work must have spent years upon the river to acquire the necessary skill, and the number of those who can properly manage the boats and at the same time have the education necessary for handling the mails, is very limited, and they should be paid accordingly.

THE FREIGHT SITUATION.

June weather in April is bringing about a speedy opening of navigation, and vessel men are rather unprepared for it. No new contracts have been made, and one or two wild trips will have to determine largely what the season's rate shall be. The Duluth wheat rate is not strong at 3c, but will probably be better when shipments are well started. The continued reports indicate a much heavier production and shipment of ore than dealers are at all willing to admit, but pending labor troubles at the mines will tend to give shippers an advantage in rates on wild cargoes at the opening. No sales of ore have been announced except those made in very small quantities to the smaller buyers; but indications are that dealers are holding back rather than making any effort to close with larger purchasers, and while an understanding has doubtless been reached with the more important furnaces, the public is not going to hear about it until arrangements with the vessels are completed. Bessemer pig is steady at the advance, and during the past week foundry irons have increased in price at least 50c per ton. All indications justify the vessel men in their present attitude regarding freights, and any advances they may obtain will be neutralized to a great extent by low water. Some chartering for first cargoes from Escanaba has been done at 55c, but the transactions are not extensive. Should only $1 be obtained as an opening rate from the head of Lake Superior the circumstances should not have a bearish effect as regards contract rates.

The Portage coal rate has been made 50c, and wild charters are on the basis of 50c for Milwaukee and 40c for the head of Lake Superior. Hard coal from Buffalo will pay 40c to Lake Michigan.

APPOINTMENTS FOR NEXT SEASON.

The following appointments of masters and engineers for the season of 1896, have been announced by owners:

SCHOONER.	MASTER.
Abbie	Halverson, ——
Adriatic	Coles, Frank
Amsden, C.	Fairweather, Chas
Becker, R. H.	Grassholt, ——
Botsford, R.	Sharron, ——
Chipman, Susie	Gunderson, N.
Chi. B. of Trade	Stewart, Charles
City of Grand Haven	Kjelson, ——
Clement, S.	Gordon, Patrick
Connelly Bros.	King, A.
Day, Eliza	Olson, ——
Delta	Schaffer, H H.
Dewolf, Delos	Parsons, D. R.
Driver	Johnson, Wm.
Danforth (Br.)	McClory, ——
Dunmore (Br.)	Phillips, John
Ely, S. P.	Spear, E. P.
Exchange	O'Hara, C.
Foster, Charles	Higgie, John
Gardner, F. B.	Allen, John
Georger, F. A.	Ellis, J. S.
Golden Age	Stalker, Daniel
Grant, Levi	Lorenz, Fred.
Holmes, J. A.	Gunderson, F.
Kildonan (Br.)	La France, F.
E. Lily,	Gunderson, L.
Locke, P. B.	Durand, Homer
Linerla	Salvison, ——
McLachlan, M. E.	Heismer, J. W.
Mason, R. P.	Rieboldt, ——
Mee, John	Olson, N.
Moore, H. D.	Gunderson, M.
Minnedosa (Br.)	Irwin, John
Melrose, (Br.)	Fleming, James
Negaunee	Cole, L. C.
Northwest	Doudy, William
Petrel	Nelson, M.
Pride	Pooler, ——
Page, M. W.	Hubbard, Charles
Quayle, Thomas	Canniff, James
Quickstep	Peterson, Charles
Raesser, Lydia E.	Lorenz, L.
Rhodes, D. P.	Bridge, John
Rosabelle	Peterson, N. P.
Ryan, C. N.	Annis, Charles
Sandusky	Keller, A. B.
Southwest	Parsons, A. B.
Stephens, J. H.	Olson, J.
Sunrise	Buchanan, ——
Sunshine	Carter, A.
Selkirk (Br.)	Staley, Charles
Tasmania	McElroy, G. G.
Vega	Johnson, ——
Waleska	Peterson, ——
Wells	Burnes, Jurgen
Weaver, Jennie	Larson, E. M.
Warmington, G. H.	Kiune, George N.
Wollin	Beane, N.
Winnipeg (Br.)	Cornwall, John

STEAMER.	MASTER.	ENGINEER.
Argo	Cottrell, George	Golden, John
Alva	Wysoon, J. H.	Kirby, J. N.
Argonaut	Woodford, C. H.	Craig, F.
Australasia	Pringle, R. C.	
Arrow	Brown, George A.	
Bulgaria	Brion, J. W.	
Bannockburn (Br.)	McMaugh, A.	Thurston, H.
Caledonia	Gain, A. H.	
Chisholm, H.	Smith, P. H.	Eggart, Albert
City of Berlin	Buie, John	Braund, Samuel
Cleveland (S.)	Framke, C. H.	McCaffrey, John
Concord	Ward, Julius	
Douglass	Meno, F. J.	Paya, Joseph
Edwards, Wm.	Johnson, J. M.	Blondin, Moses
Energy (Br.)	Brown, Lemuel	
Forbes, K. M.	Bradshaw, J. L.	Smith, George
Foster, Parks	Merritt, George E.	Marquox, Peter
Gladstone	Peterson, Henry	Mahan, J. F.
Grover, M. B.	Morris, W. E.	Church, C. J.
Glengarry (Br.)	Maudesley, Jas. W.	McSorely, Chas.
Hale, E. B.	Allen, Samuel	Hemenger, Geo.
Hesper	Howell, Paul	Doyle, P. H.
Ionia	Nelson, Daniel	Bloom, John
Italia	Cummings, C. H.	
Kelley, Fred.	Leith, Alex.	McCormick, Frank
Leland	Mara, James	Smith, A.
Lake Mich. (Br.)	Moore, John S.	Belanger, J.
Mills, R.	Brodericki, Phlip	Patrick, E. F.
Nahant	Benham, W. P.	
Nimick, A.	Rhodes, D. P.	Burns, E. J.
Olwill, M.	Brown, John F.	Wheeler, ——
Owen, Ira	Owen, J. Q.	Buchanan, Hugh
Pasadena	Stough, L.	Gilbo, J. H.
Pilgrim	Hayward, Eugene	Meno, Joseph
Pine Lake	Small, Ephraim	Porter, Theo.
Quito	Willoughby, J. W.	
Ranney, R. P.	Lehman, Benj.	Stuart, J. D.
Sheldon, S. E.	Saveland, E.	Eaton, C. W.
Stone, George	Mulholland, M.	Black, Edward
Superior	Lawless, James	Reid, George
St. Andrew (Br.)	Featherstone-haugh, W. H.	McRae, John
Shickluna (Br.)	Jackson, H. O.	Cunningham, W.
Thew, W. P.	Tripp, Benjamin	
Tuttle, H. B.	McLeod, J. H.	

BARGE.	MASTER.
101	Holdridge, Otis
104	Leonard, Louis
105	Sprowell, John
107	Trotter, George
109	Johnson, F. E.
111	Nahrstedt, John
115	Brooks, Robt.
116	Gallant, George
117	Campbell, Neil
118	Burr, James
126	Wright, Samuel
127	Siljander, A.
129	Secord, C. D.
130	Dick, W. H.
131	Emanuelson, E.
132	Grant, Chas.
133	Cameron, W. C.
134	Holdridge, Wm.
137	Leahy, James

Readers will greatly oblige us by calling our attention to errors or filling in any omitted name.

TOLEDO HARBOR, MASTERS AND PILOTS.

Captain Benj. F. Perkins, Grand Captain's Clerk (Grand Secretary) of the American Association of Masters and Pllots of Steam Vessels has organized and instituted Toledo Harbor No. 43, of Toledo, O, with 30 members. Several names of applicants who failed to appear at this last voyage will be initiated at their next voyage. The names of those who have been selected as officers for the ensuing year are as follows:

Captain, Captain Albert S. Fitts; first pilot, Captain John Cunningham; second pilot, Captain Ed. Williams; captain's clerk and purser, Captain John Nagle.

The Harbor will meet every Tuesday in the Marine Engineers' rooms, until further orders. A committee of three have been appointed to look after the grievances of any members during the season of navigation.

A BOOM FOR CONNEAUT.

The Pittsburg, Shenango & Lake Erie Railroad will be extended from Butler, Pa., into Pittsburg, by which move it will secure access to all the more important furnaces, including those of the Carnegie Steel Co., Limited, which has contracted to furnish this road annually with 2,000,000 tons of freight. Nearly all of this will be received or shipped by lake, and the road has been bonded for $5,000,000, of which $500,000 will be expended upon the company's terminals at Conneaut. The work of building the extension will not be completed in less than a year, owing to engineering difficulties, but the work at Conneaut will begin very soon, and the marine business at that port will show a very large percentage of increase this season.

SHIP BUILDING AND REPAIRS.

FIRST OF THE NEW FLEET.

There is a decided lull in ship building this week, as compared with the expectations held out last week. Figures which were being made have come to naught for the present, A tug is to be built for the Standard Oil Co. for ocean going purposes, and lake builders, among others, have been asked to bid. The contract will hardly come to the lakes, however, as the lake builders are so badly handicapped by low water between the lakes and the coast, where she is to be delivered. It is pretty well settled that the American Steel Barge Co. will build two more boats, but work on these will not begin until late in the summer.

The outlook for next season's work is pretty fair, but depends somewhat on the freight rates paid this season. Low water should result in some good to the ship builders, both as regards repair work and in its effect in reducing by about 10 per cent the aggregate carrying capacity of the present lake fleet.

The first of the new steamships for the Rockefeller line, the Sir Harry Bessemer, will be launched at the Globe shipyard in about ten days. She will therefore be delivered to her owners very little later than the contract date, May 15. She was laid down just four months ago to the day, and is a fine example of what lake yards can do in the way of hurry-up work.

The steamer W. D. Rees, of the Wilson Transit Co.'s fleet, was the first ship of the new fleet to move. She left the Cleveland shipyard Wednesday and went to Fairport to load coal. There was not the slightest hitch in her machinery, and the trial trip was in all respects a grand success. The Chase Machine Co. have a gang aboard her, covering her boiler with sectional asbestos and galvanized iron.

NAMES OF THE BESSEMER CO.'S VESSELS.

As the RECORD announced some weeks ago, the fleet of the Bessemer Steamship Co. will be named in honor of men, both in this country and Europe, who have done most toward the advancement of the iron sciences. The steamer building at the Globe yards, the first out of the new fleet, will be named the Sir Henry Bessemer. The other names will be in honor of the following persons: James Nasmyth, inventor of the steam hammer, Sir William Siemens, inventor of the regenerating furnaces; Sir Isaac Lothian Bell, who conducted important chemical and metallurgical investigations in iron; Sir William Fairbairn, inventor of tubular steel structure and of iron vessels; John Ericsson, inventor of the screw propeller, the monitor, etc.; Robert Fulton, inventor of the steamboat; George Stephenson, inventor of the locomotive; James Watt, inventor of the steam engine, Alexander L. Holley, inventor of improvements in Bessemer and other processess; George H. Corliss, inventor of improvements in steam engines; Alfred Krupp, designer and manufacturer of heavy steel ordnance.

The Pittsburgh and Washburn, purchased some time ago, by this company, will be renamed in honor of Henry Cort, inventor of the puddling furnace, and James B. Neilson, inventor of the hot blast. The barges 102 and 103 will be named after Sir Joseph Whitworth; inventor of the process of casting steel under pressure; and John Scott Russell, who made notable improvements in naval architecture.

GENERAL REPAIR WORK.

PORT HURON.—The Tempest and Seattle were in Dunford & Alverson's lower dry-dock for minor repairs. The Colorado will go into dock for some slight repairs, and will at the same time receive two new trout wheels. The owners expect big time from her this season. Work on the Cahoon and Brainard is being pushed as fast af possible, to have the ready as soon as navigation opens.

BUFFALO.—The tug Acme has gone into Mills' dry-dock for a new wheel, and the barge Hattie for recalking and general repairs.

STURGEON BAY.—The work of putting in new stanchions, covering board, bulwarks, and rail on the port bow of the tug Nelson has been completed. In addition to her other repairs the schooner Wm. Aldrich has received a new rudder.

CHICAGO.—At Miller Bros.' shipyard the steamer Brazil is in dock for some new steel plates on her bottom; the steamer J. W. Wescott for a general overhauling and extensive repairs and re-calking. The steamer A. R. Colborne was in for repairs to her stern-bearings; the revenue cutter Calumet for overhauling and cleaning and painting bottom; the schooner yachts Foxteeth and Crusader and sloop yacht Druid for repairs and cleaning and painting bottoms.

TOLEDO.—The steamer Aztec was in Craig's dry-dock last week for a new wheel and calking. This dock has been busy all winter, the boats repaired including the S. C. Reynolds, George J. Gould, Volunteer, Norwalk, Ira H. Owen, Nipigon, Melbourne and John Owen. At Gilmore's dock several of Breyman's scows are in for a overhauling. The Mongaugon is getting new stanchions rail, covering board, etc., and some inside work. The St. Peter is receiving some new bulwarks, and the W. P. Barkalow some new hatches.

MILWAUKEE.—The rebuild of the Cormorant is about completed, having cost nearly $14,000. The steamer Raleigh is having the upper part of her hull thoroughly rebuilt and strengthened. Her engines are being overhauled, steam piping renewed, etc. Her repairs will exceed $18,000. The Elfin-Mere is exchanging her three masts for two pole spars. The J. D. Marshall has been getting extensive repairs, which are about finished. The C. H. Starke will get new 22x26 engine, besides other renewals. The City of Venice and tug Hagerman have also been largely repaired.

NOTES.

The stern post for the tug S. M. Fischer, building at Craigs for the W. & M. people, is a neat piece of work. It was turned out by the Bass Foundry Co., of Fort Wayne, Ind.

The splendid new racing yacht being built by George Craig, of Craig's shipyaed, is nearing completion. She has been taken from the house in which she was built and will soon be placed in the water. She certainly has the look of a very fast craft' and if she does not show a clean pair of heels in her class to her competiters, fine lines and beautiful model count for nothing. She is 55 feet over all in length, 33 feet water line, 14 feet beam and will have a draft of 7 feet. She will be registered in the Ohio Yacht Club.

The City of Toledo is at Detroit having her machinery thoroughly overhauled. A new steam steerer is being installed.

The schooner Sweetheart has had her spars replaced with new ones at Buffalo.

The Ashtabula tugs William D., Sunol and Kunkle Bros., are being fitted with hydraulic steering gear.

David Bell, of Buffalo, has the new steel yacht which he is building for George Moon, of that city, all in frame and plated. She will be launched about the last of April.

Capt. Daniel McLeod, manager of the Inland Lloyds Register, directs attention to two typographical errors in the book. The valuation of the steel steamer Marina should be $160,000 instead of $100,000, and that of the wooden steamer Roumania should be $95,000 instead of $85,000.

The steamer Louise has been receiving extensive repairs at John E. Monk's dry-dock at Sandusky.

A. S. Hayward, of Detroit, has been awarded the contract for buoy service in Lake H. St. Clair for the fiscal year ending June 30, 1897. His bid was $6.30.

The Lake Erie Boiler Works, Buffalo, have furnished a new steel bolier to the New York tug Komak. It was installed at Thomas Marvel & Co.'s yard, Newburgh.

Considerable repair work has been done on the schooner Josephine Dresden at Racine.

A number of our subscribers have already directed that their addresses be changed, upon the opening of navigation, so that the RECORD will be sent to them in care of the vessel on which they will be engaged, via the DETROIT RIVER MARINE POSTOFFICE. This river service will be continued this season, and made even more efficient than last year, and we call the attention of our subscribers to this arrangement as according a certain and reasonably prompt delivery of the RECORD, week by week, to those engaged in the traffic up and down the lakes.

SUBSCRIBER:—The manager of the Rockefeller fleet (Bessemer Steamship Company) is Mr. L. M. Bowers. His address is Wade Building, Cleveland.

MAXIMUM DRAFT.—LIMEKILN CROSSING.

A few weeks ago we wrote to Lieut. J. B. Cavanaugh, Corps of Engineers, U. S. A., who fills the post of the late Gen. O. M. Poe at Detroit, asking his views as to the maximum draft at which vessels may load at the opening of navigation when bound to Lake Superior or Lake Michigan. His reply follows:

To the Editor of The Marine Record:

DETROIT MICH., April 15, 1896.

In reply to your letter in reference to the maximum draft to which vessels should load at the opening of navigation between Buffalo and Duluth and Buffalo and Chicago, I have to say that, as far as Lake Superior is concerned the limiting draft will be found at Sailors' Encampment, and here the conditions are practically the same as they were at the close of navigation last year; therefore, the maximum draft should not exceed that used at the close of navigation last year, i. e., about 14 feet. Between Buffalo and Chicago the maximum draft is limited to that which can be safely carried through the Detroit River. The channel from Ballard's Reef to Limekiln Crossing has been cleared to a depth of 18 feet at the normal stage, which gives, at the present stage, not more than 16 feet of water. Below the Limekiln Crossing in the Amherstburg reach, the channel is full of obstructions, having over them, at the normal stage, but 18 feet or at present but 16 feet, and there are also two or three with very little more than 17 feet at the normal stage, or, at the present time, between 15 and 15½ feet of water.

In view of these facts I would say that the maximum draft for this trade should not exceed 14½ feet.

One of the most serious obstructions is just below the Limekiln Crossing, near the center of the channel. At the normal stage it has over it but 17.4 feet of water or, at the present stage, about 15.5.

No further trouble will be experienced in Lake St. Clair, as the lower 15,000 feet of the improved channel, extending from the head of the Detroit River into Lake St. Clair, beyond the 18 ft. curve, has been thrown open to navigation. All boats should use the East half of the channel at the foot of Lake Huron, for, at the present stage of water, the Eastern half gives a clear channel 18 feet deep and 1200 feet wide.

I had intended writing at an earlier date, but have been very busy, and also wished to include in the letter the results of an examination of the obstruction at the foot of the Limekiln Crossing, which examination was completed to-day.

Very respectfully,
J. B. CAVANAUGH,
Second Lieut., Corps of Engineers, U. S. A.

NORTHERN LINE INSURANCE.

The remarks of Fairplay characterizing as so insufficient the slight increase in the rates of premium charged by foreign companies over last year were published in THE RECORD last week. Now Fairplay again comes to the front with the statement that while the increased rate has been paid, the valuations have been lowered, and in the case of the Northern Line fleet, the premiums paid aggregate not much more than last year. The figures given are as follows: In 1895 the six cargo boats of the Northern Line, valued at $160,000 each, were covered at 52s. 6d. per cent per annum (or about 2⅝ per cent U. S. money), the aggregate premium being about $25,200. Added to this were the two passenger boats, valued at $500,000 each, at 45s per cent (or about 1¾ per cent U. S. money), the premium being about $17,000, and the total for the eight ships $42,700. This year the six freight boats of the line are valued at $140,000 each, or all at $84,000 on which is paid 3¼ per cent premium, or $27,300; the second passenger ships are given a valuation of $400,000 each, on which 2 per cent is paid as premium for both of $16,000, the aggregate for the first being $43,300, or only $600 more for the entire fleet than in 1895.

Secretary Keep of the Lake Carriers' Association, reports that in all probability a number of Pintsch gas buoys will be secured for Detroit River and the Sault; also for the bad passage above the St. Clair Flats Canal and at the ent ance to Green Bay, off Long Island Jait Point. Some have already been ordered for the St. Lawrence River. As the buoys are charged only once a season, the light house tenders can easily care for them.

CORRESPONDENCE.

☞We do not hold ourselves responsible in any way for the views or opinions expressed by our correspondents. It is our desire that all sides of any question affecting the interests or welfare of the lake marine should be fairly represented in THE MARINE RECORD.

NANTICOKE SHOAL.

To the Editor of The Marine Record:

Replying to "Boatswain," I would say that my object in writing to the MARINE RECORD was to gain information that would be of use to all who are engaged in my occupation; and I am sorry to find that although "Boatswain" is apparently in close touch with said surveying party, he failed to say anything that would throw light on the subject. As to maps and school boys, there is no doubt about the educational ability of many Canadian school boys nor about the correctness of Canadian maps, but as we do our ploughing on the waters, land charts are of so little use in our business that I doubt if maps of Canada are carried on any United States vessels on our Great Lakes; and as for school boys, they simply "ain't in it." I don't want to hurt any person's feelings except when it is necessary to do so to gain information that will benefit mankind. I am ready and willing to take any amount of abuse if it will bring out valuable marine information.

Since writing the above I have spent three days in Moor township, Lambton county, Ontario, and asked many school children and others, ranging in age from eight to sixty years, where Nanticoke is, but not one could tell me. By referring to a Canadian postoffice directory we found that Jarvis is the nearest railroad station to Nanticoke—distance about 4½ miles, about SE. and NW. I asked a man in the postoffice if he had any idea how large a place Nanticoke is. He replied, "I guess it is about the same as the place you are in,—one postoffice and one inhabitant." MASTER MARINER.

PORT HURON, April 11.

TRADE AND INDUSTRIAL NOTES.

We are pleased to note that the Standard Rope & Twine Co., of New York, have established offices at Cleveland in No. 206 Western Reserve Building, where they intend carrying a large and well-assorted stock of the celebrated Sewall & Day cordage of every description, including drilling cables, tow lines and all sizes of ordinary rope. The Standard being the largest concern in the world in their line and having the best equipped mills, should certainly be in position to protect their customers thoroughly in the matter of price and quality. For half a century the Sewall & Day rope on the Great Lakes has been acknowledged to be without a peer and in that time has been sold by all the leading ship chandlers. Carrying a stock at Cleveland will prove a great convenience to all purchasers of manila and sisal rope.

The Almy Water Tube Boiler Co., says the Providence Journal of Commerce, continue to do a good business in their marine boilers. Since our last issue they have shipped four boilers for the ferry boat Camden, now building at the Crescent shipyard, Elizabethport, N. J., for the Pennsylvania Railroad ferry between Philadelphia and Camden. They have also received orders for one boiler for the fishing steamer Ethel, owned by B. W. Latham, of Noank, Conn.; one for Henry A. Laughlin, of Pittsburg, Pa., for his yacht Vesta; one for E. R. & J. H. Ladew of New York city, for their steamyacht Orienta; one for J. H. Howell, of New York city, for his steamyacht Magnet; one for N. H. Post, of New York city, for his steamyacht now building at Ogdensburg, N. Y.; one for the Providence Dry-Dock and Marine Railway Co., for use in pumping the water from the dock; also one for C. W. Wharton, of Philadelphia, for his steamyacht Chepeta.

One of the large contracts which the E. P. Allis Company, of Milwaukee, Wis., has recently secured is that of the Canal and Claiborne Street Railway company, of New Orleans, La. The company will build and furnish the latter concern's power-house with two 450 horsepower tandem compound condensing engines, with Reynolds Independent air-pump condensers. The engines and condensers will be equipped with the most modern devices for safety and economy, and will be direct coupled to General Electric Company generators.

The machinery of the large pumping plant just completed at Canon City, Col., was partially started up last week. The plant consists of a set of 550 horse-power engines of the double compound Corliss duplex pattern, the power being supplied by two boilers of 200 horsepower. The pumps have a capacity of 11,000,000 gallons per diem. The gross weight of the pumps is 110 tons, said to be the largest plant of this character ever constructed in that state, the F. P. Lannon Foundry and Machine Works, at Pueblo, being the manufacturers.

The King Bridge Company, of Cleveland. has secured a contract to construct a bridge over the Tar River, at Tarboro, N. C., at a cost of $14,950 The superstructure of the bridge will be 510 feet long and of steel. There will also be 30 feet of earth abutment at each end. The bridge will have an 18-foot roadway with a sidewalk on each side.

The new mill of the Illinois Steel Company, at Joliet, is doing good work. The second week after starting it made 2,500 gross tons, running both finishing rod trains. It is thought that the capacity can be increased to 600 tons per day, double turn.

The M. T. Davidson Steam Pump Company of New York is executing a contract for the Baltimore & Cantonsville Railroad Company, for four vertical Davidson twin air pumps of 25-inch air cylinders, 10 14-inch pressure pumps, and three small pumping engines. The company is also building the air pumps for the United States cruiser Chicago and is equipping two torpedo boats.

The recent contract between the General Electric and the Westinghouse Electric & Mfg. Cos., relative to the common use of patents of the two companies, was finally executed on April 1, and ratified. It is now reported that the agreement is a forerunner of a closer arrangement between the two companies and consolidation talk is again renewed.

ALPENA, Mich. April 2, 1896.

MacKinnon Mfg. Co., Bay City, Mich:

GENTLEMEN:—Your wheel furnished the tug Ralph, gives good satisfaction. Think the tug does better work with less fuel than she did with the other wheel that she had. We consider this a good wheel. Yours truly, F. W. GILCHRIST.

The Cramp Ship and Engine Building Co. have purchased the right to manufacture the Yarrow water-tube boiler in the United States.

The new boiler works of John Mohr & Son, South Chicago, are nearing completion and will probably be ready for operation in May.

The Detroit Dry-dock Co., will install an extensive 2-ton tram rail system, including turntables, etc., for the new shops in its shipyard at Wyandotte.

VISIBLE SUPPLY OF GRAIN.

As compiled for THE MARINE RECORD by George F. Stone, Secretary Chicago Board of Trade, April 11, 1896:

CITIES WHERE STORED.	WHEAT. Bushels.	CORN. Bushels.	OATS. Bushels.	RYE. Bushels.	BARLEY Bushels.
Albany	.....	10,000	40,000	.....	.....
Baltimore	105,000	614,000	250,000	75,000	.....
Boston	114,000	36,000	131,000	.....	.....
Buffalo	901,000	17,000	32,000	185,000	250,000
" afloat	.....	.....	.....	.....	.....
Chicago	17,053,000	6,443,000	1,916,000	457,000	17,000
" afloat	1,411,000	6,731,000	1,525,000	.....	.....
Cincinnati	11,000	3,000	20,000	1,000	26,000
Detroit	247,000	13,000	5,000	13,000	3,000
" afloat	.....	.....	.....	.....	.....
Duluth and Superior	14,352,000	144,000	1,180,000	220,000	456,000
" " afloat	512,000	.....	.....	.....	.....
Indianapolis	100,000	31,000	.....	.....	.....
Kansas City	1,220,000	160,000	66,000	28,000	.....
Milwaukee	407,000	.....	17,000	271,000	35,000
" afloat	176,000	.....	280,000	.....	.....
Minneapolis	19,086,000	57,000	739,000	116,000	179,000
Montreal	907,000	75,000	417,000	6,000	62,000
New York	783,000	101,000	1,484,000	14,000	6,000
" afloat	16,000	.....	.....	.....	10,000
Oswego	.....	.....	.....	.....	17,000
Peoria	11,000	17,000	260,000	5,000	.....
Philadelphia	114,000	55,000	182,000	.....	.....
St. Louis	1,181,000	879,000	506,000	3,000	.....
" afloat	.....	451,000	.....	.....	.....
Toledo	594,000	701,000	68,000	115,000	.....
" afloat	.....	140,000	.....	.....	.....
Toronto	29,000	24,000	101,000	.....	38,000
On Canal	.....	8,000	12,000	.....	.....
On Lakes	.....	.....	.....	.....	.....
On Mississippi	.....	137,000	19,000	.....	.....
Grand Total	59,330,000	16,847,000	9,250,000	1,509,000	1,099,000
Corresponding date 1895	70,487,000	12,221,000	5,727,000	213,000	489,000

The Empire Boiler Cleaning Compound, which Mr. Alex C. Bates is introducing on the Great Lakes is rapidly making its way. The last contract closed was for the steamer Castalia.

NOTES.

The bill to repeal the compulsory pilotage system, so far as it affects sailing vessels engaged in the coastwise trade, was defeated in the House by a vote of 117 to 52.

At her trial made on April 7, the steam ram Katahdin made a maximum speed of 13½ knots for an hour and a half. with two main and one auxiliary boilers in use, under natural draft. During the rest of the time only the two main boilers were in use. The average speed for the entire run was 11 knots.

The largest electric auxiliary yacht in the world is now being constructed for John Jacob Astor. She is 72x12x4 feet and will have twin screws run by electric motors of 75 h. p., supplied from immense storage batteries. She will be schooner rigged, with two Tobin bronze centerboards raised by electric power. The whistle will be blown with compressed air.

The Pennsylvania R. R. Co. has contracted for the construction of two large ferry boats, one of which will be built by the Cramp Co., the other by the Charles Hillman Co., for a new service between its Jersey City Terminal and 23d St., New York, where the company will erect a station to accommodate its up-town passenger and freight traffic.

The Mohegan, the second of the two iron steamers being built at Roach's shipyard for the New London Steamboat Co. in connection with the Central Vermont R. R. was launched on Thursday at Chester, Pa. There will be no accommodations for passengers. The steamers are 285 ft. in length, and are built for battling with the heavy seas of Long Island Sound during the winter season.

The battle-ship Iowa was christened at her launching on March 27th with champagne, as is customary, and not with buttermilk or raspberry vinegar, as some of the folks in the State of Iowa seem to have desired. Something might be said in favor of breaking a bottle of Congress water, for its name's sake, on the nose of a new battleship, but champagne seems to have done good service at ship christenings heretofore, and doubtless it was felt to be safest to stick to that. We are told, however, that sundry officials of the W. C. T. U. of Iowa remonstrated at the use of it, and that Governor Drake's daughter, who did the christening, received many letters of expostulation. These signs of an abstinent spirit encourage the apprehension that there will be no punch-bowl in the Iowa's silver service (if she gets one) and no spoons either, for they might be used to stir toddy.—Harper's Weekly.

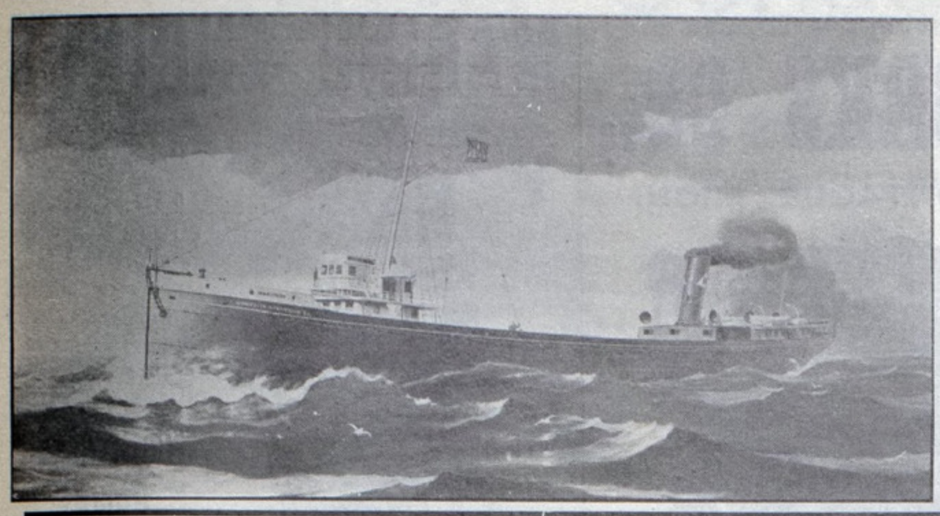
The Detroit and Cleveland Steam Navigation Company's steamers are now running daily (except Sunday) between Detroit and Cleveland. When traveling east or west, north or south, try to arrange to take advantage of these luxurious steamers between Michigan and Ohio. If you are contemplating a summer outing, write A. A. Schantz, G. P. A., Detroit, Mich., for illustrated pamphlet, which gives full information of a trip to Mackinac via the Coast line.

The proposed improvement of the Wheeling and Lake Erie terminals and the Huron Dock Co.'s property at Huron, O., contemplates the removal of 350 feet of the government pier, and the construction of 1830 feet of dock front and an ore dock 300 feet wide by 8,000 feet long; also the dredging of a slip 150 feet wide by 800 feet long and 18 feet deep. The work is all to be completed by August 1. Copies of the specifications can be seen at the RECORD office.

PROPOSALS.

U. S. ENGINEER OFFICE, 185 Euclid avenue, Cleveland, O., March 28, 1896. Sealed proposals for removing and rebuilding part of east pier at Cleveland Harbor, Ohio, will be received here until 2 o'clock p. m., Standard time, April 25, 1896, and then publicly opened. Information furnished on application. JARED A. SMITH, Lt. Col., Eng'rs.

U. S. ENGINEER OFFICE, Telephone Building, Detroit, Mich., April 4, 1896. Sealed proposals for dredging at several of the harbors on east shore of Lake Michigan, between Charlevoix and Muskegon, Mich., will be received here until 12 o'clock M., Standard time, April 25, 1896, and then publicly opened. Apply here for information. G. J. LYDECKER, Lt. Col. Eng'rs. 15-17



GRAHAM'S

Rapid Fueling Docks, Detroit River, foot 21st Street.

No interference from Passenger or Car Ferry Lines.
Full supply of BEST STEAM COAL always on hand.
Wide stretch of river and plenty of water at dock. POCKETS and CHUTES arranged for various types of vessels, allowing QUICK DISPATCH day or night.

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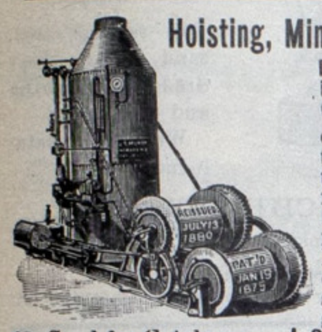

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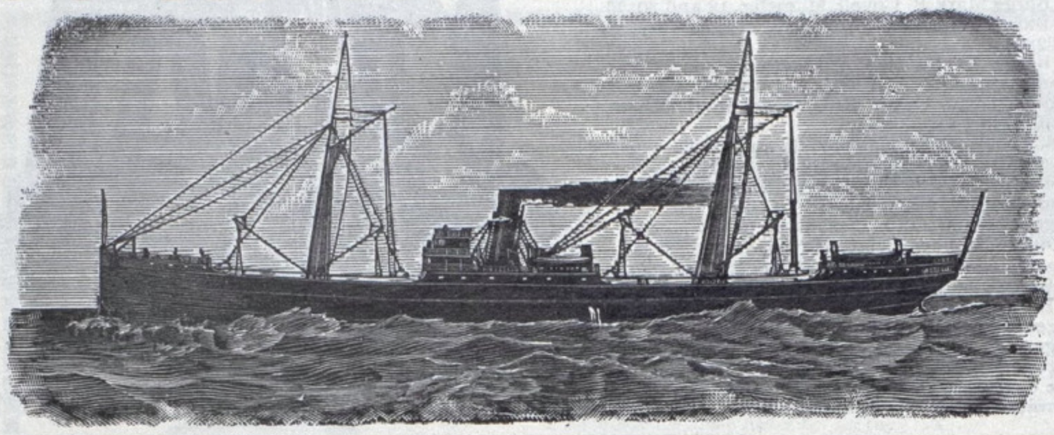

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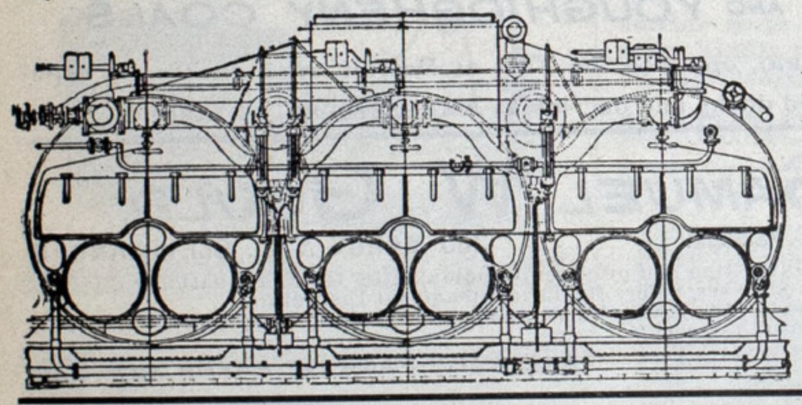

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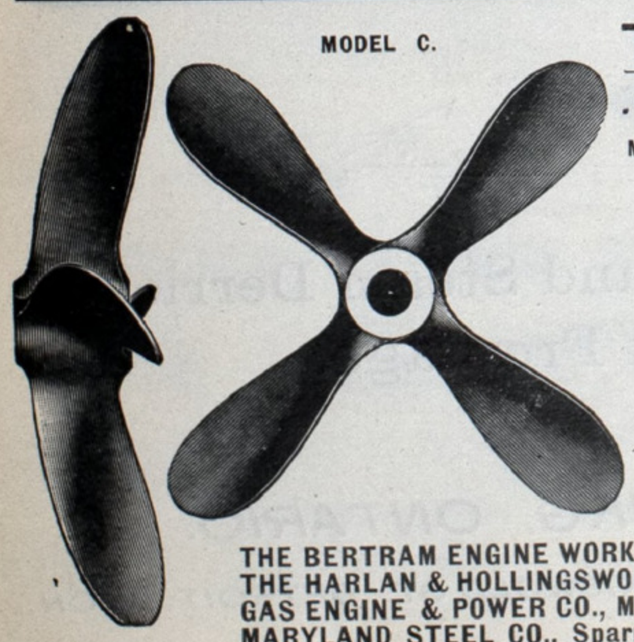

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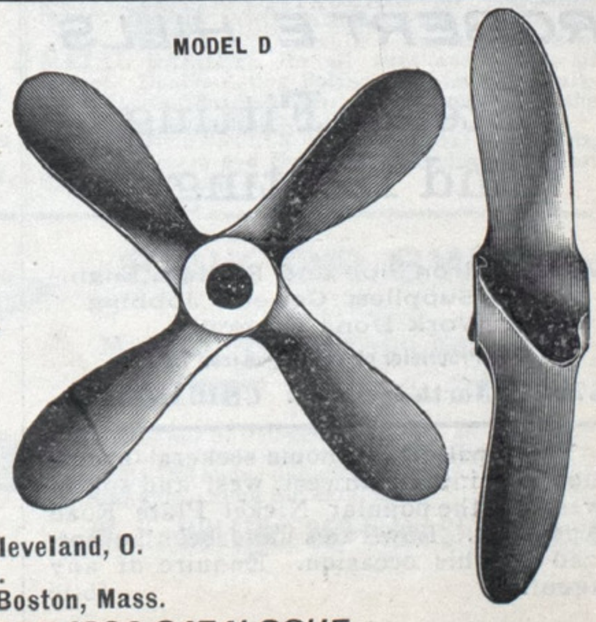

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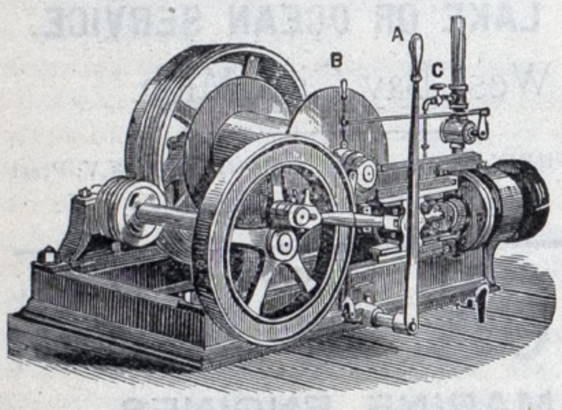

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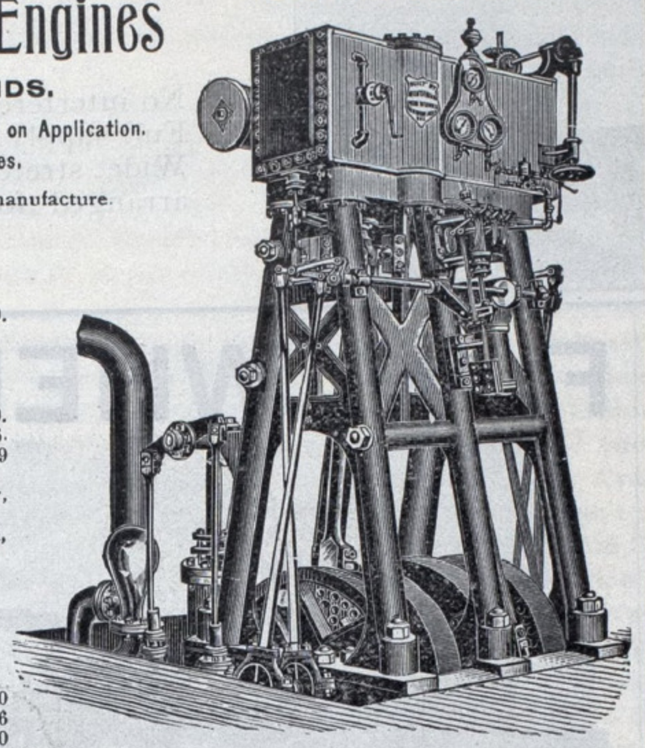

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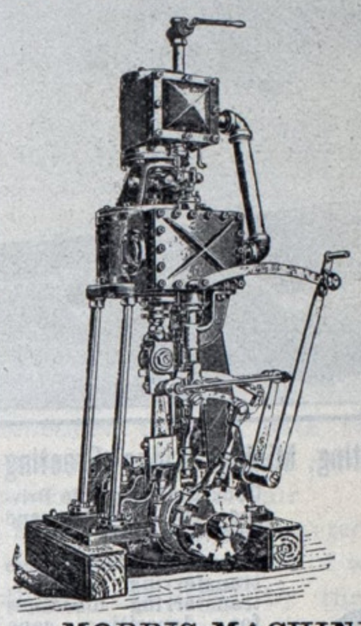

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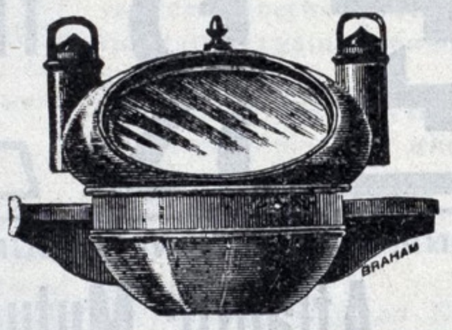

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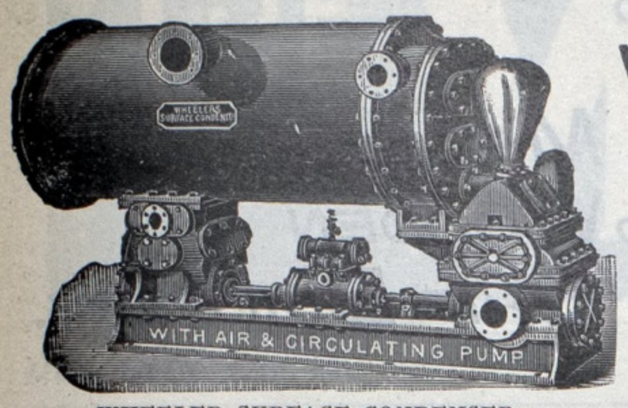

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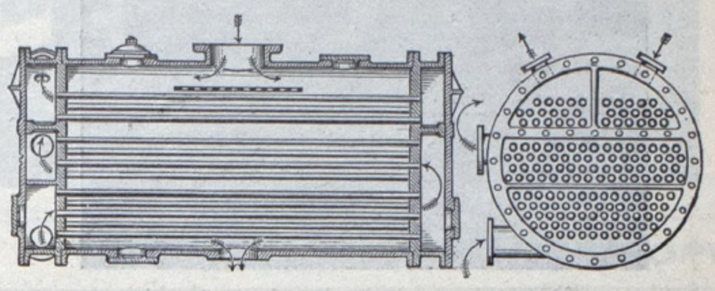

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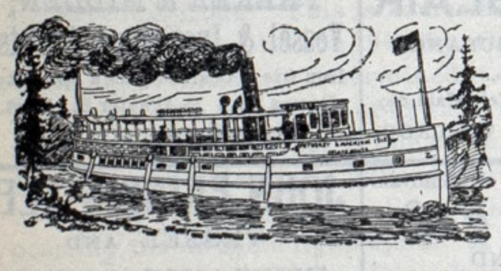

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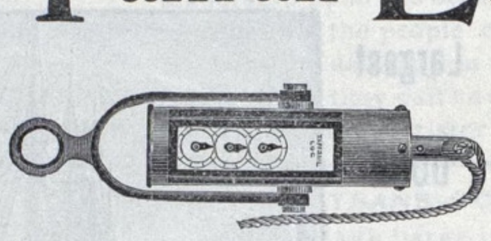

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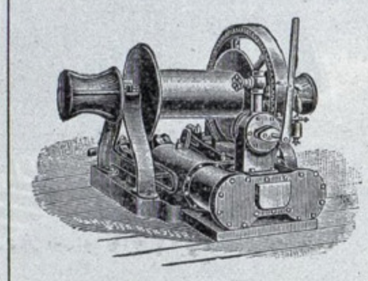

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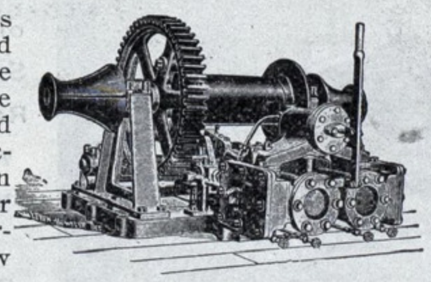

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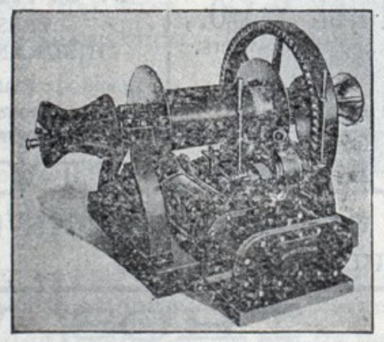

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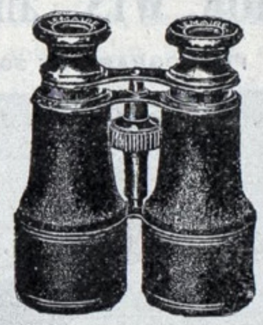

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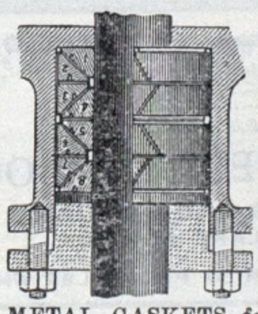

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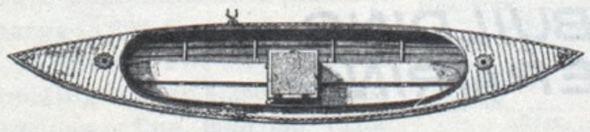

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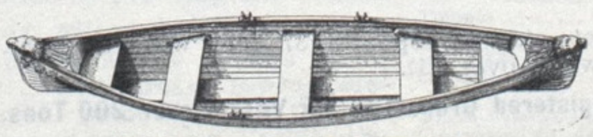

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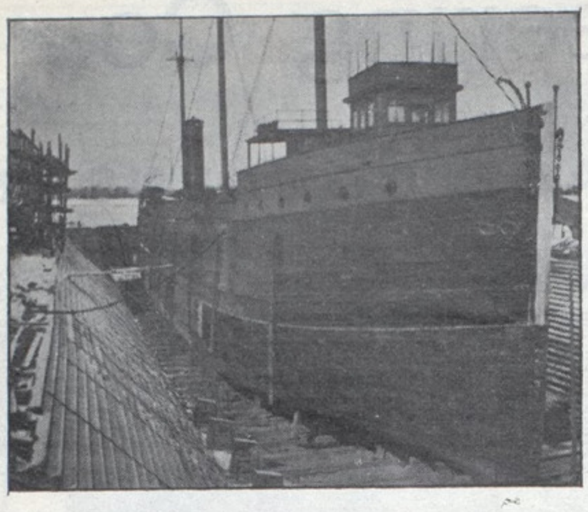

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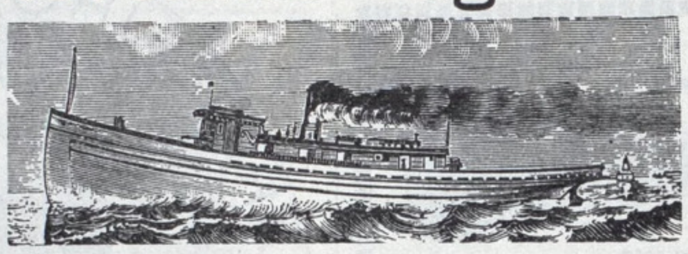

Steamers when outside wanting our Tugs, blow one long whistle and as many short ones as they want tugs.

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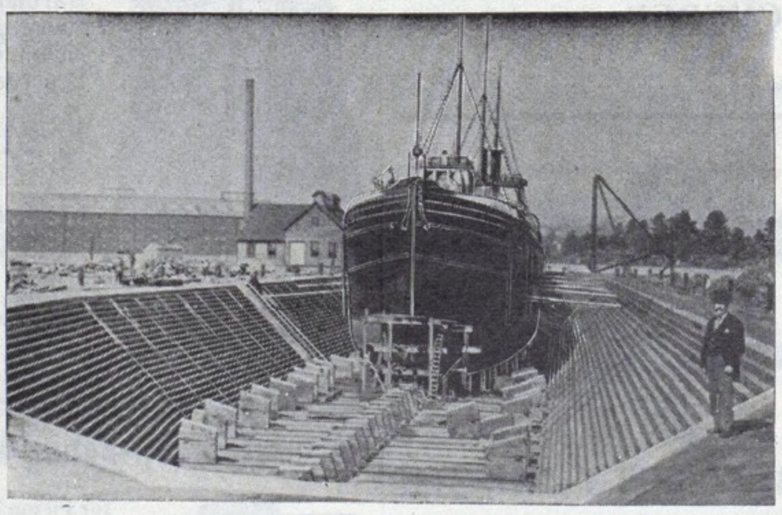

Best Quality of Oak in Stock for Repairing Wooden Vessels of all Classes.

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Length, Extreme.....537 feet.
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LARGEST DRY DOCK ON THE LAKES.

PRICES FOR REPAIRS AND DOCKING SAME AS AT LOWER LAKE PORTS.

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Dimensions of Dock, 236 feet long, 55 feet wide at top and 37 feet wide at gate. Nine feet water over sill.

RATES OF DOCKING, Ten Cents per Registered Gross Ton for Vessel over 200 Tons.

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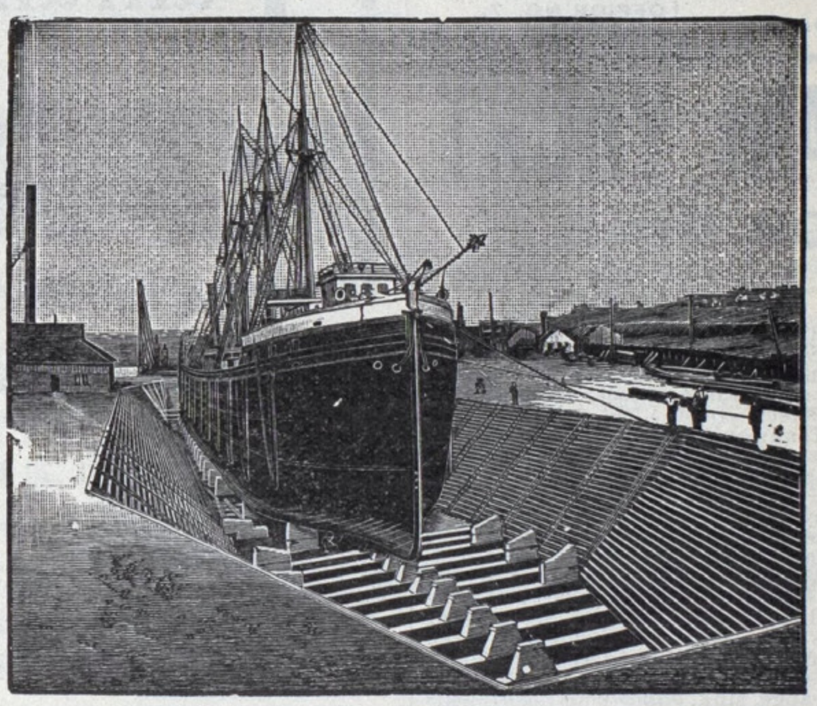

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